CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD

CENTRAL VALLEY REGION

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ORDER R5-2013-XXXX
NPDES NO. CA0083681

WASTE DISCHARGE REQUIREMENTS FOR THE COUNTY OF SACRAMENTO DEPARTMENT OF WASTE MANAGEMENT AND RECYCLING KIEFER LANDFILL GROUNDWATER EXTRACTION AND TREATMENT PLANT SACRAMENTO COUNTY

The following Discharger is subject to waste discharge requirements as set forth in this Order:

Table 1. Discharger Information

Discharger	County of Sacramento, Department of Waste Management and Recycling
Name of Facility	Kiefer Landfill Groundwater Extraction and Treatment Plant
Facility Address	12701 Kiefer Boulevard
	Sloughhouse, California 95683
	Sacramento County
The U.S. Environmental Protection Agency (USEPA) and the Regional Water Quality Control Board have classified this discharge as a minor discharge.	

The discharge by the County of Sacramento, Department of Waste Management and Recycling from the discharge points identified below is subject to waste discharge requirements as set forth in this Order:

Table 2. Discharge Location

Discharge Point	Effluent Description	Discharge Point Latitude	Discharge Point Longitude	Receiving Water
001	Treated Groundwater	38º 30’ 11” N	121º 10’ 25” W	Deer Creek
002	Treated Groundwater	38º 30’ 25” N	121º 10’ 51” W	Sedimentation Basin

Table 3. Administrative Information

This Order was adopted by the Regional Water Quality Control Board on:	**<Adoption Date>**
This Order shall become effective on:	**<Effective Date>**
This Order shall expire on:	**<Expiration Date>**
The Discharger shall file a Report of Waste Discharge in accordance with title 23, California Code of Regulations, as application for issuance of new waste discharge requirements no later than:	**<180 days prior to the Order expiration date OR insert date>**

I, **Pamela C. Creedon**, Executive Officer, do hereby certify that this Order with all attachments is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Valley Region, on **<Adoption Date>**.

_____
Pamela C. Creedon, Executive Officer

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I. FACILITY INFORMATION

The following Discharger is subject to waste discharge requirements as set forth in this Order:

Table 4. Facility Information

Discharger	County of Sacramento, Department of Waste Management and Recycling
Name of Facility	Kiefer Landfill Groundwater Extraction and Treatment Plant
Facility Address	12701 Kiefer Boulevard
	Sloughhouse, California 95683
	Sacramento County
Facility Contact, Title, and Phone	Eric Vanderbilt, P.E., Senior Civil Engineer, (916) 875-6568
Mailing Address	9850 Goethe Road, Sacramento, CA 95827
Type of Facility	Groundwater Extraction and Treatment Facility
Facility Design Flow	2.17 million gallons per day (MGD)

II. FINDINGS

The California Regional Water Quality Control Board, Central Valley Region (hereinafter Central Valley Water Board), finds:

A. Background. The County of Sacramento, Department of Waste Management and Recycling (hereinafter Discharger) was discharging pursuant to Order R5-2007-0014 and National Pollutant Discharge Elimination System (NPDES) Permit No. CA0083681. The Discharger submitted a Report of Waste Discharge, dated 2 September 2011, and applied for a NPDES permit renewal to continue the discharge of up to 2.17 MGD of treated groundwater from the Kiefer Landfill Groundwater Extraction and Treatment Plant, hereinafter Facility. The application was deemed complete on 5 December 2011.

For the purposes of this Order, references to the “discharger” or “permittee” in applicable federal and state laws, regulations, plans, or policy are held to be equivalent to references to the Discharger herein.

B. Facility Description. The Discharger owns and operates a municipal solid waste landfill with a groundwater extraction and treatment plant. The groundwater treatment system consists of a groundwater extraction well network and an air stripping system. Treated groundwater is discharged from Discharge Point No. 001 (see table on cover page) to Deer Creek, a water of the United States, and a tributary to the Cosumnes River within the Lower Cosumnes-Lower Mokelumne watershed. During groundwater treatment system maintenance operations, the Discharger may discharge groundwater to the on-site sedimentation basin at Discharge Point No. 002. A more detailed description of the Facility is provided in the Fact Sheet (Attachment F). Attachment B provides a map of the area around the Facility. Attachment C provides a flow schematic of the Facility.

C. Legal Authorities. This Order is issued pursuant to section 402 of the Clean Water Act (CWA) and implementing regulations adopted by USEPA and chapter 5.5, division 7 of the California Water Code (Water Code commencing with section 13370). It shall serve as a NPDES permit for point source discharges from this Facility to surface waters.

This Order also serves as Waste Discharge Requirements (WDRs) pursuant to article 4, chapter 4, division 7 of the Water Code (commencing with section 13260).

D. **Background and Rationale for Requirements.** The Central Valley Water Board developed the requirements in this Order based on information submitted as part of the application, through monitoring and reporting programs, and other available information. The Fact Sheet (Attachment F), which contains background information and rationale for Order requirements, is hereby incorporated into this Order and constitutes part of the Findings for this Order. Attachments A through E and G through I are also incorporated into this Order.

E. **California Environmental Quality Act (CEQA).** Under Water Code section 13389, this action to adopt an NPDES permit is exempt from the provisions of CEQA, Public Resources Code sections 21100-21177.

F. **Technology-based Effluent Limitations.** Section 301(b) of the CWA and implementing USEPA permit regulations at section 122.44, title 40 of the Code of Federal Regulations (40 CFR 122.44), require that permits include conditions meeting applicable technology-based requirements at a minimum, and any more stringent effluent limitations necessary to meet applicable water quality standards. The discharge authorized by this Order must meet minimum federal technology-based requirements based on Best Professional Judgment (BPJ) in accordance with 40 CFR 125.3. A detailed discussion of the technology-based effluent limitations development is included in the Fact Sheet.

G. **Water Quality-based Effluent Limitations (WQBELs).** Section 301(b) of the CWA and 40 CFR 122.44(d) require that permits include limitations more stringent than applicable federal technology-based requirements where necessary to achieve applicable water quality standards.

40 CFR 122.44(d)(1)(i) mandates that permits include effluent limitations for all pollutants that are or may be discharged at levels that have the reasonable potential to cause or contribute to an exceedance of a water quality standard, including numeric and narrative objectives within a standard. Where reasonable potential has been established for a pollutant, but there is no numeric criterion or objective for the pollutant, WQBELs must be established using: (1) USEPA criteria guidance under CWA section 304(a), supplemented where necessary by other relevant information; (2) an indicator parameter for the pollutant of concern; or (3) a calculated numeric water quality criterion, such as a proposed state criterion or policy interpreting the state's narrative criterion, supplemented with other relevant information, as provided in 40 CFR 122.44(d)(1)(vi).

H. **Water Quality Control Plans.** The Central Valley Water Board adopted a *Water Quality Control Plan, Fourth Edition (Revised October 2011)*, for the Sacramento and San Joaquin River Basins (hereinafter Basin Plan) that designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. The Basin Plan at page II-2.00 states that the "…*beneficial uses of any specifically identified water body generally apply to its tributary streams*." Table II-1 of the Basin Plan identifies the

beneficial uses of certain specific water bodies. The Basin Plan does not specifically identify beneficial uses for Deer Creek, but does identify present and potential uses in Table II-1 for the Cosumnes River, to which Deer Creek is tributary. In addition, the Basin Plan implements State Water Resources Control Board (State Water Board) Resolution No. 88-63, which established state policy that all waters, with certain exceptions, should be considered suitable or potentially suitable for municipal or domestic supply. Thus, as discussed in detail in the Fact Sheet, beneficial uses applicable to Deer Creek are as follows:

Table 5. Basin Plan Beneficial Uses

Discharge Point	Receiving Water Name	Beneficial Use(s)
001	Deer Creek	Existing uses from Table II-1 of the Basin Plan: Municipal and domestic supply (MUN); Agricultural supply, including irrigation and stock watering (AGR); Water contact recreation, including canoeing and rafting (REC-1); Non-contact water recreation (REC-2); Warm freshwater habitat (WARM); Cold freshwater habitat (COLD); Migration of aquatic organisms, warm and cold (MIGR); Spawning, reproduction, and/or early development, warm and cold (SPWN); and Wildlife habitat (WILD) Suitable uses from State Water Board Resolution No. 88-63: Municipal and domestic supply (MUN)
002	Groundwater	Municipal and domestic supply (MUN); Industrial service supply (IND); Industrial process supply (PRO); and Agricultural supply, including irrigation and stock watering (AGR)

The Basin Plan includes a list of Water Quality Limited Segments (WQLSs), which are defined as "…*those sections of lakes, streams, rivers or other fresh water bodies where water quality does not meet (or is not expected to meet) water quality standards even after the application of appropriate limitations for point sources (40 CFR 130, et seq.)*." The Basin Plan also states, "*Additional treatment beyond minimum federal standards will be imposed on dischargers to WQLSs. Dischargers will be assigned or allocated a maximum allowable load of critical pollutants so that water quality objectives can be met in the segment*." Deer Creek (Sacramento County) is listed on the 303(d) list as impaired for iron. The Cosumnes River below Michigan Bar is listed on the 303(d) list (listed as) as impaired for E. coli, invasive species, and sediment toxicity. No TMDLs have been adopted for Deer Creek or the Cosumnes River.

Requirements of this Order implement the Basin Plan.

I. **National Toxics Rule (NTR) and California Toxics Rule (CTR).** USEPA adopted the NTR on 22 December 1992, and later amended it on 4 May 1995 and 9 November 1999. About 40 criteria in the NTR applied in California. On 18 May 2000, USEPA adopted the CTR. The CTR promulgated new toxics criteria for California and,

in addition, incorporated the previously adopted NTR criteria that were applicable in the state. The CTR was amended on 13 February 2001. These rules contain water quality criteria for priority pollutants.

J. **State Implementation Policy.** On 2 March 2000, the State Water Board adopted the *Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California* (State Implementation Policy or SIP). The SIP became effective on 28 April 2000 with respect to the priority pollutant criteria promulgated for California by USEPA through the NTR and to the priority pollutant objectives established by the Central Valley Water Board in the Basin Plan. The SIP became effective on 18 May 2000 with respect to the priority pollutant criteria promulgated by USEPA through the CTR. The State Water Board adopted amendments to the SIP on 24 February 2005 that became effective on 13 July 2005. The SIP establishes implementation provisions for priority pollutant criteria and objectives and provisions for chronic toxicity control. Requirements of this Order implement the SIP.

K. **Compliance Schedules and Interim Requirements.** In general, an NPDES permit must include final effluent limitations that are consistent with CWA section 301 and with 40 CFR 122.44(d). There are exceptions to this general rule. The State Water Board's *Policy for Compliance Schedules in National Pollutant Discharge Elimination System Permits* (Compliance Schedule Policy) allows compliance schedules for new, revised, or newly interpreted water quality objectives or criteria, or in accordance with a TMDL. All compliance schedules must be as short as possible, and may not exceed ten years from the effective date of the adoption, revision, or new interpretation of the applicable water quality objective or criterion, unless a TMDL allows a longer schedule. A Regional Water Board, however, is not required to include a compliance schedule, but may issue a Time Schedule Order pursuant to Water Code section 13300 or a Cease and Desist Order pursuant to Water Code section 13301 where it finds that the discharger is violating or threatening to violate the permit. The Central Valley Water Board will consider the merits of each case in determining whether it is appropriate to include a compliance schedule in a permit, and, consistent with the Compliance Schedule Policy, should consider feasibility of achieving compliance, and must impose a schedule that is as short as possible to achieve compliance with the effluent limit based on the objective or criteria.

The Compliance Schedule Policy and the SIP do not allow compliance schedules for priority pollutants beyond 18 May 2010, except for new or more stringent priority pollutant criteria adopted by USEPA after 17 December 2008.

Where a compliance schedule for a final effluent limitation exceeds one year, the Order must include interim numeric limitations for that constituent or parameter, interim milestones and compliance reporting within 14 days after each interim milestone. The permit may also include interim requirements to control the pollutant, such as pollutant minimization and source control measures.

This Order does not include a compliance schedule or interim limitations for effluent limitations. However, this Order does establish a compliance schedule for the Discharger to come into compliance with the requirements of Title 27, California Code of

Regulations, section 20005 et seq (Title 27), or to demonstrate the discharge meets an exemption from the Title 27 requirements.

L. **Alaska Rule.** On 30 March 2000, USEPA revised its regulation that specifies when new and revised state and tribal water quality standards become effective for CWA purposes. (40 CFR 131.21 and 65 FR 24641 (27 April 2000).) Under the revised regulation (also known as the Alaska rule), new and revised standards submitted to USEPA after 30 May 2000, must be approved by USEPA before being used for CWA purposes. The final rule also provides that standards already in effect and submitted to USEPA by 30 May 2000 may be used for CWA purposes, whether or not approved by USEPA.

M. **Stringency of Requirements for Individual Pollutants.** This Order contains both technology-based effluent limitations and WQBELs for individual pollutants. The technology-based effluent limitations consist of restrictions on flow and volatile organic compounds (VOCs). The WQBELs consist of restrictions on chlorine residual, pH, and total dissolved solids (TDS). This Order's technology-based pollutant restrictions implement the minimum, applicable federal technology-based requirements.

WQBELs have been scientifically derived to implement water quality objectives that protect beneficial uses. Both the beneficial uses and the water quality objectives have been approved pursuant to federal law and are the applicable federal water quality standards. To the extent that toxic pollutant WQBELs were derived from the CTR, the CTR is the applicable standard pursuant to 40 CFR 131.38. The scientific procedures for calculating the individual WQBELs for priority pollutants are based on the CTR-SIP, which was approved by USEPA on 18 May 2000. All beneficial uses and water quality objectives contained in the Basin Plan were approved under state law and submitted to and approved by USEPA prior to 30 May 2000. Any water quality objectives and beneficial uses submitted to USEPA prior to 30 May 2000, but not approved by USEPA before that date, are nonetheless "*applicable water quality standards for purposes of the [Clean Water] Act*" pursuant to 40 CFR 131.21(c)(1). Collectively, this Order's restrictions on individual pollutants are no more stringent than required to implement the technology-based requirements of the CWA and the applicable water quality standards for purposes of the CWA.

N. **Antidegradation Policy**. 40 CFR 131.12 requires that the state water quality standards include an antidegradation policy consistent with the federal policy. The State Water Board established California's antidegradation policy in State Water Board Resolution No. 68-16. Resolution No. 68-16 incorporates the federal antidegradation policy where the federal policy applies under federal law. Resolution No. 68-16 requires that existing quality of waters be maintained unless degradation is justified based on specific findings. The Central Valley Water Board's Basin Plan implements, and incorporates by reference, both the state and federal antidegradation policies. As discussed in detail in the Fact Sheet, the permitted discharge is consistent with the antidegradation provision of 40 CFR 131.12 and Resolution No. 68-16.

O. **Anti-Backsliding Requirements.** Sections 303(d)(4) and 402(o)(2) of the CWA and federal regulations at 40 CFR 122.44(l) prohibit backsliding in NPDES permits. These anti-backsliding provisions require effluent limitations in a reissued permit to be as

stringent as those in the previous permit, with some exceptions. Some effluent limitations in this Order are less stringent that those in Order R5-2007-0014. As discussed in detail in the Fact Sheet, this relaxation of effluent limitations is consistent with the anti-backsliding requirements of the CWA and federal regulations.

P. Endangered Species Act. This Order does not authorize any act that results in the taking of a threatened or endangered species or any act that is now prohibited, or becomes prohibited in the future, under either the California Endangered Species Act (Fish and Game Code sections 2050 to 2097) or the Federal Endangered Species Act (16 U.S.C.A. sections 1531 to 1544). This Order requires compliance with effluent limits, receiving water limits, and other requirements to protect the beneficial uses of waters of the state. The Discharger is responsible for meeting all requirements of the applicable Endangered Species Act.

Q. Monitoring and Reporting. 40 CFR 122.48 requires that all NPDES permits specify requirements for recording and reporting monitoring results. Water Code sections 13267 and 13383 authorize the Central Valley Water Board to require technical and monitoring reports. The Monitoring and Reporting Program establishes monitoring and reporting requirements to implement federal and State requirements. The Monitoring and Reporting Program is provided in Attachment E.

The technical and monitoring reports in this Order are required in accordance with Water Code section 13267, which states the following in subsection (b)(1), "*In conducting an investigation specified in subdivision (a), the regional board may require that any person who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge waste within its region, or any citizen or domiciliary, or political agency or entity of this state who has discharged, discharges, or is suspected of having discharged or discharging, or who proposes to discharge, waste outside of its region that could affect the quality of waters within its region shall furnish, under penalty of perjury, technical or monitoring program reports which the regional board requires. The burden, including costs, of these reports shall bear a reasonable relationship to the need for the report and the benefits to be obtained from the reports. In requiring those reports, the regional board shall provide the person with a written explanation with regard to the need for the reports, and shall identify the evidence that supports requiring that person to provide the reports.*"

The Discharger owns and operates the Facility subject to this Order. The monitoring reports required by this Order are necessary to determine compliance with this Order. The need for the monitoring reports is discussed in the Fact Sheet.

R. Standard and Special Provisions. Standard Provisions, which apply to all NPDES permits in accordance with 40 CFR 122.41, and additional conditions applicable to specified categories of permits in accordance with 40 CFR 122.42, are provided in Attachment D. The discharger must comply with all standard provisions and with those additional conditions that are applicable under 40 CFR 122.42. The Central Valley Water Board has also included in this Order special provisions applicable to the Discharger. Some special provisions require submittal of technical reports. All technical reports are required in accordance with Water Code section 13267. The

rationale for the special provisions and need for technical reports in this Order is provided in the Fact Sheet.

S. Provisions and Requirements Implementing State Law. The provisions/requirements in sections IV.B, VI.A.2.o, and VI.C.7 of this Order are included to implement state law only. These provisions/requirements are not required or authorized under the federal CWA; consequently, violations of these provisions/requirements are not subject to the enforcement remedies that are available for NPDES violations.

T. Notification of Interested Parties. The Central Valley Water Board has notified the Discharger and interested agencies and persons of its intent to prescribe WDRs for the discharge and has provided them with an opportunity to submit their written comments and recommendations. Details of notification are provided in the Fact Sheet of this Order.

U. Consideration of Public Comment. The Central Valley Water Board, in a public meeting, heard and considered all comments pertaining to the discharge. Details of the Public Hearing are provided in the Fact Sheet.

THEREFORE, IT IS HEREBY ORDERED, that Waste Discharge Requirements Order R5-2007-0014 and Time Schedule Order R5-2007-0015 are rescinded upon the effective date of this Order except for enforcement purposes, and, in order to meet the provisions contained in division 7 of the Water Code (commencing with section 13000) and regulations adopted thereunder, and the provisions of the federal CWA and regulations and guidelines adopted thereunder, the Discharger shall comply with the requirements in this Order.

III. DISCHARGE PROHIBITIONS

A. Discharge of treated groundwater at a location or in a manner different from that described in the Findings is prohibited.

B. The by-pass or overflow of wastes to surface waters is prohibited, except as allowed by Federal Standard Provisions I.G. and I.H. (Attachment D).

C. Neither the discharge nor its treatment shall create a nuisance as defined in section 13050 of the Water Code.

IV. EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

A. Effluent Limitations – Discharge Point No. 001

1. Final Effluent Limitations – Discharge Point No. 001 (Deer Creek)

a. The Discharger shall maintain compliance with the following effluent limitations at Discharge Point No. 001, with compliance measured at Monitoring Location EFF-001 as described in the Monitoring and Reporting Program:

Table 6. Effluent Limitations for Discharges to Deer Creek

Parameter	Units	Effluent Limitations			
		Average Monthly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
pH	standard units	--	--	6.5	8.5
Total Dissolved Solids	mg/L	367	--	--	--
Volatile Organic Compounds[1]	µg/L	--	0.5	--	--

[1] This effluent limitation is applicable to vinyl chloride, tetrachloroethylene, trichloroethylene, trans-1,2-dichloroethylene, 1,1-dichloroethane, dichlorodifluoromethane, trichlorofluoromethane, methylene chloride, chloroform, and cis-1,2-dichloroethylene.

b. Acute Whole Effluent Toxicity. Survival of aquatic organisms in 96-hour bioassays of undiluted waste shall be no less than:

i. 70%, minimum for any one bioassay; and
ii. 90%, median for any three consecutive bioassays.

c. Chronic Whole Effluent Toxicity. There shall be no chronic toxicity in the effluent discharge.

d. Total Residual Chlorine. Effluent total residual chlorine shall not exceed:

i. 0.011 mg/L, as a 4-day average; and
ii. 0.019 mg/L, as a 1-hour average.

e. Average Monthly Discharge Flow. The average monthly discharge flow shall not exceed 2.17 million gallons per day.

2. Interim Effluent Limitations – Not Applicable

B. Land Discharge Specifications

1. Final Effluent Limitations – Discharge Point No. 002 (Sedimentation Basin)

a. Effective immediately, the Discharger shall maintain compliance with the following effluent limitations at Discharge Point No. 002, with compliance measured at Monitoring Location EFF-002 as described in the Monitoring and Reporting Program.

Table 7. Effluent Limitations for Discharges to Sedimentation Basin

Parameter	Units	Discharge Specifications	
		Maximum Daily	Average Annual
Total Dissolved Solids	mg/L	1,000	450
Chlorine, Total Residual	mg/L	4.0	--

2. Discharge from the groundwater treatment system to the sedimentation basin shall be conducted only during well and groundwater treatment system maintenance events or in case of an emergency.

3. The sedimentation basin must be operated such that there is adequate capacity to contain run-off produced from a 100-year, 24-hour storm event in addition to the volume of non-storm water discharged to the sedimentation basin during approved maintenance events. If adequate capacity is not available in the sedimentation basin, non-storm water discharges to the sedimentation basin are prohibited.

4. The sedimentation basin shall be managed to prevent breeding of mosquitoes. In particular:

a. An erosion control program should assure that small coves and irregularities are not created around the perimeter of the water surface.

b. Weeds shall be minimized.

c. Dead algae, vegetation, and debris shall not accumulate on the water surface.

C. Reclamation Specifications – Not Applicable

V. RECEIVING WATER LIMITATIONS

A. Surface Water Limitations

Receiving water limitations are based on water quality objectives contained in the Basin Plan and are a required part of this Order. The discharge shall not cause the following in Deer Creek:

1. **Biostimulatory Substances.** Water to contain biostimulatory substances which promote aquatic growths in concentrations that cause nuisance or adversely affect beneficial uses.

2. **Chemical Constituents.** Chemical constituents to be present in concentrations that adversely affect beneficial uses.

3. **Color.** Discoloration that causes nuisance or adversely affects beneficial uses.

4. **Dissolved Oxygen:**

   a. The monthly median of the mean daily dissolved oxygen concentration to fall below 85 percent of saturation in the main water mass;

   b. The 95 percentile dissolved oxygen concentration to fall below 75 percent of saturation; nor

   c. The dissolved oxygen concentration to be reduced below 7.0 mg/L at any time.

5. **Floating Material.** Floating material to be present in amounts that cause nuisance or adversely affect beneficial uses.

6. **Oil and Grease.** Oils, greases, waxes, or other materials to be present in concentrations that cause nuisance, result in a visible film or coating on the surface of the water or on objects in the water, or otherwise adversely affect beneficial uses.

7. **pH.** The pH to be depressed below 6.5 nor raised above 8.5.

8. **Pesticides:**

   a. Pesticides to be present, individually or in combination, in concentrations that adversely affect beneficial uses;

   b. Pesticides to be present in bottom sediments or aquatic life in concentrations that adversely affect beneficial uses;

   c. Total identifiable persistent chlorinated hydrocarbon pesticides to be present in the water column at concentrations detectable within the accuracy of analytical methods approved by USEPA or the Executive Officer;

   d. Pesticide concentrations to exceed those allowable by applicable antidegradation policies (see State Water Board Resolution No. 68-16 and 40 CFR 131.12.);

e. Pesticide concentrations to exceed the lowest levels technically and economically achievable;

f. Pesticides to be present in concentration in excess of the maximum contaminant levels set forth in CCR, Title 22, division 4, chapter 15; nor

g. Thiobencarb to be present in excess of 1.0 µg/L.

9. Radioactivity:

a. Radionuclides to be present in concentrations that are harmful to human, plant, animal, or aquatic life nor that result in the accumulation of radionuclides in the food web to an extent that presents a hazard to human, plant, animal, or aquatic life.

b. Radionuclides to be present in excess of the maximum contaminant levels (MCLs) specified in Table 64442 of section 64442 and Table 64443 of section 64443 of Title 22 of the California Code of Regulations.

10. Suspended Sediments. The suspended sediment load and suspended sediment discharge rate of surface waters to be altered in such a manner as to cause nuisance or adversely affect beneficial uses.

11. Settleable Substances. Substances to be present in concentrations that result in the deposition of material that causes nuisance or adversely affects beneficial uses.

12. Suspended Material. Suspended material to be present in concentrations that cause nuisance or adversely affect beneficial uses.

13. Taste and Odors. Taste- or odor-producing substances to be present in concentrations that impart undesirable tastes or odors to fish flesh or other edible products of aquatic origin, or that cause nuisance, or otherwise adversely affect beneficial uses.

14. Temperature. The temperature to exceed the limitations specified below:

Table 8. Receiving Water Limitations for Temperature

Date	Daily Maximum[1]	Monthly Average[2]
	°F	°F
January and February	63	58
March	65	60
April	71	64
May	77	68
June	81	74
July through September	81	77
October	77	72
November	73	65
December	65	58

[1] Maximum not to be exceeded.
[2] Defined as a calendar month average.

15. **Toxicity.** Toxic substances to be present, individually or in combination, in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.

16. **Turbidity.** The turbidity to increase as follows:

    a. Where natural turbidity is less than 1 Nephelometric Turbidity Unit (NTU), discharges shall not cause the receiving water daily average turbidity to exceed 2 NTUs or daily maximum turbidity to exceed 5 NTUs;

    b. Where natural turbidity is less between 1 and 5 NTUs, discharges shall not cause receiving water daily average turbidity to increase more than 1 NTU or daily maximum turbidity to exceed 5 NTUs;

    c. Where natural turbidity is between 5 and 50 NTUs, receiving water increases due to the discharge shall not exceed 20 percent;

    d. Where natural turbidity is between 50 and 100 NTUs, receiving water increases due to the discharge shall not exceed 10 NTUs; and

    e. Where natural turbidity is greater than 100 NTUs, receiving water increases due to the discharge shall not exceed 10 percent.

B. Groundwater Limitations

Release of waste constituents from the sedimentation basin, due to discharges from the Facility, shall not cause or contribute to groundwater within influence of the Facility to contain:

1. Taste or odor-producing constituents, toxic substances, or any other constituents, in concentrations that cause nuisance or adversely affect beneficial uses; and

2. Waste constituent concentrations in excess of water quality objectives or background water quality, whichever is greater.

VI. PROVISIONS

A. Standard Provisions

1. The Discharger shall comply with all Standard Provisions (federal NPDES standard conditions from 40 CFR Part 122) included in Attachment D of this Order.

2. The Discharger shall comply with the following provisions:

    a. If the Discharger's wastewater treatment plant is publicly owned or subject to regulation by California Public Utilities Commission, it shall be supervised and operated by persons possessing certificates of appropriate grade according to Title 23, CCR, division 3, chapter 26.

b. After notice and opportunity for a hearing, this Order may be terminated or modified for cause, including, but not limited to:

violation of any term or condition contained in this Order;

obtaining this Order by misrepresentation or by failing to disclose fully all relevant facts;

a change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge; and

a material change in the character, location, or volume of discharge.

The causes for modification include:

- *New regulations.* New regulations have been promulgated under section 405(d) of the CWA, or the standards or regulations on which the permit was based have been changed by promulgation of amended standards or regulations or by judicial decision after the permit was issued.

- *Land application plans.* When required by a permit condition to incorporate a land application plan for beneficial reuse of sewage sludge, to revise an existing land application plan, or to add a land application plan.

- *Change in sludge use or disposal practice.* Under 40 CFR 122.62(a)(1), a change in the Discharger's sludge use or disposal practice is a cause for modification of the permit. It is cause for revocation and reissuance if the Discharger requests or agrees.

The Central Valley Water Board may review and revise this Order at any time upon application of any affected person or the Central Valley Water Board's own motion.

c. If a toxic effluent standard or prohibition (including any scheduled compliance specified in such effluent standard or prohibition) is established under section 307(a) of the CWA, or amendments thereto, for a toxic pollutant that is present in the discharge authorized herein, and such standard or prohibition is more stringent than any limitation upon such pollutant in this Order, the Central Valley Water Board will revise or modify this Order in accordance with such toxic effluent standard or prohibition.

The Discharger shall comply with effluent standards and prohibitions within the time provided in the regulations that establish those standards or prohibitions, even if this Order has not yet been modified.

d. This Order shall be modified, or alternately revoked and reissued, to comply with any applicable effluent standard or limitation issued or approved under sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a)(2) of the CWA, if the effluent standard or limitation so issued or approved:

i. Contains different conditions or is otherwise more stringent than any effluent limitation in the Order; or

ii. Controls any pollutant limited in the Order.

The Order, as modified or reissued under this paragraph, shall also contain any other requirements of the CWA then applicable.

e. The provisions of this Order are severable. If any provision of this Order is found invalid, the remainder of this Order shall not be affected.

f. The Discharger shall take all reasonable steps to minimize any adverse effects to waters of the State or users of those waters resulting from any discharge or sludge use or disposal in violation of this Order. Reasonable steps shall include such accelerated or additional monitoring as necessary to determine the nature and impact of the non-complying discharge or sludge use or disposal.

g. The Discharger shall ensure compliance with any existing or future pretreatment standard promulgated by USEPA under section 307 of the CWA, or amendment thereto, for any discharge to the municipal system.

h. A copy of this Order shall be maintained at the discharge facility and be available at all times to operating personnel. Key operating personnel shall be familiar with its content.

i. Safeguard to electric power failure:

i. The Discharger shall provide safeguards to assure that, should there be reduction, loss, or failure of electric power, the discharge shall comply with the terms and conditions of this Order.

ii. Upon written request by the Central Valley Water Board, the Discharger shall submit a written description of safeguards. Such safeguards may include alternate power sources, standby generators, retention capacity, operating procedures, or other means. A description of the safeguards provided shall include an analysis of the frequency, duration, and impact of power failures experienced over the past 5 years on effluent quality and on the capability of the Discharger to comply with the terms and conditions of the Order. The adequacy of the safeguards is subject to the approval of the Central Valley Water Board.

iii. Should the treatment works not include safeguards against reduction, loss, or failure of electric power, or should the Central Valley Water Board not approve the existing safeguards, the Discharger shall, within 90 days of having been advised in writing by the Central Valley Water Board that the existing safeguards are inadequate, provide to the Central Valley Water Board and USEPA a schedule of compliance for providing safeguards such that in the event of reduction, loss, or failure of electric power, the Discharger shall comply with the terms and conditions of this Order. The schedule of

compliance shall, upon approval of the Central Valley Water Board, become a condition of this Order.

j. The Discharger, upon written request of the Central Valley Water Board, shall file with the Board a technical report on its preventive (failsafe) and contingency (cleanup) plans for controlling accidental discharges, and for minimizing the effect of such events. This report may be combined with that required under the Regional Water Board Standard Provision contained in section VI.A.2.i of this Order.

The technical report shall:

i. Identify the possible sources of spills, leaks, untreated waste by-pass, and contaminated drainage. Loading and storage areas, power outage, waste treatment unit outage, and failure of process equipment, tanks and pipes should be considered.

ii. Evaluate the effectiveness of present facilities and procedures and state when they became operational.

iii. Predict the effectiveness of the proposed facilities and procedures and provide an implementation schedule containing interim and final dates when they will be constructed, implemented, or operational.

The Central Valley Water Board, after review of the technical report, may establish conditions which it deems necessary to control accidental discharges and to minimize the effects of such events. Such conditions shall be incorporated as part of this Order, upon notice to the Discharger.

k. A publicly owned treatment works whose waste flow has been increasing, or is projected to increase, shall estimate when flows will reach hydraulic and treatment capacities of its treatment and disposal facilities. The projections shall be made in January, based on the last 3 years' average dry weather flows, peak wet weather flows and total annual flows, as appropriate. When any projection shows that capacity of any part of the facilities may be exceeded in 4 years, the Discharger shall notify the Central Valley Water Board by 31 January. A copy of the notification shall be sent to appropriate local elected officials, local permitting agencies and the press. Within 120 days of the notification, the Discharger shall submit a technical report showing how it will prevent flow volumes from exceeding capacity or how it will increase capacity to handle the larger flows. The Central Valley Water Board may extend the time for submitting the report.

l. The Discharger shall submit technical reports as directed by the Executive Officer. All technical reports required herein that involve planning, investigation, evaluation, or design, or other work requiring interpretation and proper application of engineering or geologic sciences, shall be prepared by or under the direction of persons registered to practice in California pursuant to California Business and Professions Code, sections 6735, 7835, and 7835.1. To demonstrate compliance with Title 16, CCR, sections 415 and 3065, all technical reports must contain a statement of the qualifications of the responsible

registered professional(s). As required by these laws, completed technical reports must bear the signature(s) and seal(s) of the registered professional(s) in a manner such that all work can be clearly attributed to the professional responsible for the work.

m. The Central Valley Water Board is authorized to enforce the terms of this permit under several provisions of the Water Code, including, but not limited to, sections 13385, 13386, and 13387.

n. For publicly owned treatment works, prior to making any change in the point of discharge, place of use, or purpose of use of treated wastewater that results in a permanent decrease of flow in any portion of a watercourse, the Discharger must file a petition with the State Water Board, Division of Water Rights, and receive approval for such a change. (Water Code section 1211).

o. In the event the Discharger does not comply or will be unable to comply for any reason, with any prohibition, maximum daily effluent limitation, 1-hour average effluent limitation, or receiving water limitation contained in this Order, the Discharger shall notify the Central Valley Water Board by telephone (916) 464-3291 within 24 hours of having knowledge of such noncompliance, and shall confirm this notification in writing within 5 days, unless the Central Valley Water Board waives confirmation. The written notification shall include the information required by the Standard Provision contained in Attachment D section V.E.1. [40 CFR 122.41(l)(6)(i)].

p. Failure to comply with provisions or requirements of this Order, or violation of other applicable laws or regulations governing discharges from this facility, may subject the Discharger to administrative or civil liabilities, criminal penalties, and/or other enforcement remedies to ensure compliance. Additionally, certain violations may subject the Discharger to civil or criminal enforcement from appropriate local, state, or federal law enforcement entities.

q. In the event of any change in control or ownership of land or waste discharge facilities presently owned or controlled by the Discharger, the Discharger shall notify the succeeding owner or operator of the existence of this Order by letter, a copy of which shall be immediately forwarded to the Central Valley Water Board.

To assume operation under this Order, the succeeding owner or operator must apply in writing to the Executive Officer requesting transfer of the Order. The request must contain the requesting entity's full legal name, the state of incorporation if a corporation, address and telephone number of the persons responsible for contact with the Central Valley Water Board and a statement. The statement shall comply with the signatory and certification requirements in the federal Standard Provisions (Attachment D, section V.B) and state that the new owner or operator assumes full responsibility for compliance with this Order. Failure to submit the request shall be considered a discharge without requirements, a violation of the Water Code. Transfer shall be approved or disapproved in writing by the Executive Officer.

B. Monitoring and Reporting Program Requirements

The Discharger shall comply with the Monitoring and Reporting Program, and future revisions thereto, in Attachment E of this Order.

C. Special Provisions

1. Reopener Provisions

a. Conditions that necessitate a major modification of a permit are described in 40 CFR 122.62, including, but not limited to:

i. If new or amended applicable water quality standards are promulgated or approved pursuant to section 303 of the CWA, or amendments thereto, this permit may be reopened and modified in accordance with the new or amended standards.

ii. When new information, that was not available at the time of permit issuance, would have justified different permit conditions at the time of issuance.

b. This Order may be reopened for modification, or revocation and reissuance, as a result of the detection of a reportable priority pollutant generated by special conditions included in this Order. These special conditions may be, but are not limited to, fish tissue sampling, whole effluent toxicity, monitoring requirements on internal waste stream(s), and monitoring for surrogate parameters. Additional requirements may be included in this Order as a result of the special condition monitoring data.

c. Whole Effluent Toxicity. As a result of a Toxicity Reduction Evaluation (TRE), this Order may be reopened to include a numeric chronic toxicity limitation, a new acute toxicity limitation, and/or a limitation for a specific toxicant identified in the TRE. Additionally, if the State Water Board revises the SIP's toxicity control provisions that would require the establishment of numeric chronic toxicity effluent limitations, this Order may be reopened to include a numeric chronic toxicity effluent limitation based on the new provisions.

d. Water Effects Ratios (WER) and Metal Translators. A default WER of 1.0 has been used in this Order for calculating CTR criteria for applicable inorganic constituents. In addition, default dissolved-to-total metal translators have been used to convert water quality objectives from dissolved to total recoverable for select metals. If the Discharger performs studies to determine site-specific WERs and/or site-specific dissolved-to-total metal translators, this Order may be reopened to modify the effluent limitations for the applicable inorganic constituents.

e. Constituent Study. If, after review of the constituents study, it is determined that the discharge has reasonable potential to cause or contribute to an exceedance of a water quality objective for selenium, this Order may be reopened and effluent limitations added.

f. **Exemption to Title 27.** If the Discharger provides information demonstrating that discharges to groundwater from the sedimentation basin meet the conditions for an exemption from the requirements of Title 27, this Order may be reopened to modify the findings regarding Title 27.

2. **Special Studies, Technical Reports and Additional Monitoring Requirements**

a. **Chronic Whole Effluent Toxicity.** For compliance with the Basin Plan's narrative toxicity objective, this Order requires the Discharger to conduct chronic whole effluent toxicity (WET) testing, as specified in the Monitoring and Reporting Program (Attachment E, section V). Furthermore, this Provision requires the Discharger to investigate the causes of, and identify corrective actions to reduce or eliminate effluent toxicity. If the discharge exhibits toxicity, as described in subsection ii below, the Discharger is required to initiate a TRE in accordance with an approved TRE Workplan, and take actions to mitigate the impact of the discharge and prevent recurrence of toxicity. A TRE is a site-specific study conducted in a stepwise process to identify the source(s) of toxicity and the effective control measures for effluent toxicity. TREs are designed to identify the causative agents and sources of effluent toxicity, evaluate the effectiveness of the toxicity control options, and confirm the reduction in effluent toxicity. This Provision includes procedures for accelerated chronic toxicity monitoring and TRE initiation.

i. **Accelerated Monitoring and TRE Initiation.** When the numeric toxicity monitoring trigger is exceeded during regular chronic toxicity monitoring, the Discharger shall initiate accelerated monitoring as required in the Accelerated Monitoring Specifications. The Discharger shall initiate a TRE to address effluent toxicity if any WET testing results exceed the numeric toxicity monitoring trigger during accelerated monitoring.

ii. **Numeric Toxicity Monitoring Trigger.** The numeric toxicity monitoring trigger to initiate a TRE is > 1 TU_C (where TU_C = 100/NOEC). The monitoring trigger is not an effluent limitation; it is the toxicity threshold at which the Discharger is required to begin accelerated monitoring and initiate a TRE when the effluent exhibits toxicity.

iii. **Accelerated Monitoring Specifications.** If the numeric toxicity monitoring trigger is exceeded during regular chronic toxicity testing, the Discharger shall initiate accelerated monitoring within 14 days of notification by the laboratory of the exceedance. Accelerated monitoring shall consist of four (4) chronic toxicity tests conducted once every 2 weeks using the species that exhibited toxicity. The following protocol shall be used for accelerated monitoring and TRE initiation:

(a) If the results of four (4) consecutive accelerated monitoring tests do not exceed the monitoring trigger, the Discharger may cease accelerated monitoring and resume regular chronic toxicity monitoring. However, notwithstanding the accelerated monitoring results, if there is evidence of

effluent toxicity, the Executive Officer may require that the Discharger initiate a TRE.

(b) If the source(s) of the toxicity is easily identified (e.g., temporary plant upset), the Discharger shall make necessary corrections to the facility and shall continue accelerated monitoring until four (4) consecutive accelerated tests do not exceed the monitoring trigger. Upon confirmation that the effluent toxicity has been removed, the Discharger may cease accelerated monitoring and resume regular chronic toxicity monitoring.

(c) If the result of any accelerated toxicity test exceeds the monitoring trigger, the Discharger shall cease accelerated monitoring and begin a TRE to investigate the cause(s) of, and identify corrective actions to reduce or eliminate effluent toxicity. Within thirty (30) days of notification by the laboratory of any test result exceeding the monitoring trigger during accelerated monitoring, the Discharger shall submit a TRE Action Plan to the Central Valley Water Board including, at minimum:

(1) Specific actions the Discharger will take to investigate and identify the cause(s) of toxicity, including a TRE WET monitoring schedule;

(2) Specific actions the Discharger will take to mitigate the impact of the discharge and prevent the recurrence of toxicity; and

(3) A schedule for these actions.

b. Constituent Study. There are indications that the discharge may contain selenium in concentrations that have a reasonable potential to cause or contribute to an instream exceedance of water quality objectives. The Discharger shall conduct a constituent study to evaluate the presence of selenium in the effluent, as follows:

Task	Compliance Date
i. Conduct monthly effluent monitoring for selenium for 12 months	Monthly sampling for 12 months beginning **1 July 2013**
ii. Submit Constituent Study results and reasonable potential analysis.	**1 October 2014**
iii. If the new selenium data demonstrates that reasonable potential exists, submit a Treatment Feasibility Study and Work Plan to reduce the discharge of selenium.	**1 April 2015**

3. Best Management Practices and Pollution Prevention

a. Salinity Evaluation and Minimization Plan. The Discharger shall prepare and implement a salinity evaluation and minimization plan to identify and address sources of salinity from the Facility. The plan shall be completed and submitted to the Central Valley Water Board within 9 months of the adoption date of this Order for the approval.

4. Construction, Operation and Maintenance Specifications

a. Operation and Maintenance Program. The Discharger shall update and maintain an Operations and Maintenance (O&M) Program for the groundwater extraction and treatment system and discharges of treated groundwater to Deer Creek and the on-site sedimentation basin at Discharge Point Nos. 001 and 002, respectively. **By 1 April 2013**, the Discharger shall submit to the Central Valley Water Board an updated O&M Program, which shall describe, at a minimum, management of discharges to the sedimentation basin, methods for complying with the requirements and limitations in this Order, and maintenance and rehabilitation activities, as described further in section VII.B.4.a of the Fact Sheet (Attachment F).

5. Special Provisions for Municipal Facilities (POTWs Only) – Not Applicable

6. Other Special Provisions

a. Treated groundwater may be used for dust control at the landfill in accordance with a plan that has been submitted to the Executive Officer.

b. Under an agreed upon mitigation measure with the California Department of Fish and Game, the Discharger shall maintain a minimum constant and uninterrupted flow of 0.18 MGD when discharging from Discharge Point No. 001 to Deer Creek. Continuous flow may be interrupted for repair or maintenance of the system or in the event of unusual or emergency circumstances. It is not the intent of the mitigation measure, or these requirements, to preclude the beneficial reuse of treated water for other than discharge to Deer Creek.

7. Compliance Schedules

c. Compliance with requirements of Title 27, California Code of Regulations, section 20005 et seq (Title 27). The discharge to the sedimentation basin does not meet an exemption of Title 27. The Discharger shall meet the following schedule to come into compliance with Title 27 or demonstrate the discharge meets one of the exemptions to the Title 27 requirements (i.e., Title 27, Section 20090 of the California Code of Regulations).

Task	Compliance Date
i. Submit Workplan/Schedule for conducting groundwater evaluation to evaluate applicability of Title 27 exemptions	1 May 2013
ii. Submit Technical Report summarizing groundwater study and Title 27 exemption analysis	1 May 2016
iii. Submit Workplan/Schedule for compliance with Title 27, if Technical Report indicates Title 27 exemptions are not applicable	1 December 2016
iv. Full Compliance with Title 27	1 December 2019[1]

[1] The final compliance date is subject to change depending on the necessary facilities determined in Task iii for compliance with Title 27.

VII. COMPLIANCE DETERMINATION

A. Total Residual Chlorine Effluent Limitations (Section IV.A.1.d). Continuous monitoring analyzers for chlorine residual or for dechlorination agent residual in the effluent are appropriate methods for compliance determination. A positive residual dechlorination agent in the effluent indicates that chlorine is not present in the discharge, which demonstrates compliance with the effluent limitations. This type of monitoring can also be used to prove that some chlorine residual exceedances are false positives. Continuous monitoring data showing either a positive dechlorination agent residual or a chlorine residual at or below the prescribed limit are sufficient to show compliance with the total residual chlorine effluent limitations, as long as the instruments are maintained and calibrated in accordance with the manufacturer's recommendations.

Any excursion above the 1-hour average or 4-day average total residual chlorine effluent limitations is a violation. If the Discharger conducts continuous monitoring and the Discharger can demonstrate, through data collected from a back-up monitoring system, that a chlorine spike recorded by the continuous monitor was not actually due to chlorine, then any excursion resulting from the recorded spike will not be considered an exceedance, but rather reported as a false positive. Records supporting validation of false positives shall be maintained in accordance with Section IV Standard Provisions (Attachment D).

B. Volatile Organic Compounds (VOCs) Maximum Daily Effluent Limitation (Section IV.A.1.a). This effluent limitation is only applicable to VOCs of concern, which include vinyl chloride, tetrachloroethylene, trichloroethylene, trans-1,2-dichloroethylene, 1,1-dichloroethane, dichlorodifluoromethane, trichlorofluoromethane, methylene chloride, chloroform, and cis-1,2-dichloroethylene.

C. Chronic Whole Effluent Toxicity Effluent Limitation (Section IV.A.1.c). Compliance with the accelerated monitoring and TRE provisions of Provision VI.C.2.a shall constitute compliance with the effluent limitation.

D. Priority Pollutant Effluent Limitations. Compliance with effluent limitations for priority pollutants shall be determined in accordance with Section 2.4.5 of the SIP, as follows:

1. Dischargers shall be deemed out of compliance with an effluent limitation, if the concentration of the priority pollutant in the monitoring sample is greater than the effluent limitation and greater than or equal to the reporting level (RL).

2. Dischargers shall be required to conduct a Pollutant Minimization Program (PMP) in accordance with section 2.4.5.1 of the SIP when there is evidence that the priority pollutant is present in the effluent above an effluent limitation and either:

a. A sample result is reported as detected, but not quantified (DNQ) and the effluent limitation is less than the RL; or

b. A sample result is reported as non-detect (ND) and the effluent limitation is less than the method detection limit (MDL).

3. When determining compliance with an average monthly effluent limitation (AMEL) and more than one sample result is available in a month, the discharger shall compute the arithmetic mean unless the data set contains one or more reported determinations of DNQ or ND. In those cases, the discharger shall compute the median in place of the arithmetic mean in accordance with the following procedure:

a. The data set shall be ranked from low to high, reported ND determinations lowest, DNQ determinations next, followed by quantified values (if any). The order of the individual ND or DNQ determinations is unimportant.

b. The median value of the data set shall be determined. If the data set has an odd number of data points, then the median is the middle value. If the data set has an even number of data points, then the median is the average of the two values around the middle unless one or both of the points are ND or DNQ, in which case the median value shall be the lower of the two data points where DNQ is lower than a value and ND is lower than DNQ.

4. If a sample result, or the arithmetic mean or median of multiple sample results, is below the RL, and there is evidence that the priority pollutant is present in the effluent above an effluent limitation and the discharger conducts a PMP (as described in section 2.4.5.1), the discharger shall <u>not</u> be deemed out of compliance.

ATTACHMENT A – DEFINITIONS

Arithmetic Mean (μ)
Also called the average, is the sum of measured values divided by the number of samples. For ambient water concentrations, the arithmetic mean is calculated as follows:

Arithmetic mean = $\mu = \Sigma x / n$ where: Σx is the sum of the measured ambient water concentrations, and n is the number of samples.

Average Monthly Effluent Limitation (AMEL)
The highest allowable average of daily discharges over a calendar month, calculated as the sum of all daily discharges measured during a calendar month divided by the number of daily discharges measured during that month.

Average Weekly Effluent Limitation (AWEL)
The highest allowable average of daily discharges over a calendar week (Sunday through Saturday), calculated as the sum of all daily discharges measured during a calendar week divided by the number of daily discharges measured during that week.

Bioaccumulative
Those substances taken up by an organism from its surrounding medium through gill membranes, epithelial tissue, or from food and subsequently concentrated and retained in the body of the organism.

Carcinogenic
Pollutants are substances that are known to cause cancer in living organisms.

Coefficient of Variation (CV)
CV is a measure of the data variability and is calculated as the estimated standard deviation divided by the arithmetic mean of the observed values.

Daily Discharge
Daily Discharge is defined as either: (1) the total mass of the constituent discharged over the calendar day (12:00 am through 11:59 pm) or any 24-hour period that reasonably represents a calendar day for purposes of sampling (as specified in the permit), for a constituent with limitations expressed in units of mass or; (2) the unweighted arithmetic mean measurement of the constituent over the day for a constituent with limitations expressed in other units of measurement (e.g., concentration).

The daily discharge may be determined by the analytical results of a composite sample taken over the course of 1 day (a calendar day or other 24-hour period defined as a day) or by the arithmetic mean of analytical results from one or more grab samples taken over the course of the day.

For composite sampling, if 1 day is defined as a 24-hour period other than a calendar day, the analytical result for the 24-hour period will be considered as the result for the calendar day in which the 24-hour period ends.

Detected, but Not Quantified (DNQ)
DNQ are those sample results less than the RL, but greater than or equal to the laboratory's MDL.

Dilution Credit
Dilution Credit is the amount of dilution granted to a discharge in the calculation of a water quality-based effluent limitation, based on the allowance of a specified mixing zone. It is calculated from the dilution ratio or determined through conducting a mixing zone study or modeling of the discharge and receiving water.

Effluent Concentration Allowance (ECA)
ECA is a value derived from the water quality criterion/objective, dilution credit, and ambient background concentration that is used, in conjunction with the coefficient of variation for the effluent monitoring data, to calculate a long-term average (LTA) discharge concentration. The ECA has the same meaning as waste load allocation (WLA) as used in USEPA guidance (Technical Support Document For Water Quality-based Toxics Control, March 1991, second printing, EPA/505/2-90-001).

Enclosed Bays
Enclosed Bays means indentations along the coast that enclose an area of oceanic water within distinct headlands or harbor works. Enclosed bays include all bays where the narrowest distance between the headlands or outermost harbor works is less than 75 percent of the greatest dimension of the enclosed portion of the bay. Enclosed bays include, but are not limited to, Humboldt Bay, Bodega Harbor, Tomales Bay, Drake's Estero, San Francisco Bay, Morro Bay, Los Angeles-Long Beach Harbor, Upper and Lower Newport Bay, Mission Bay, and San Diego Bay. Enclosed bays do not include inland surface waters or ocean waters.

Estimated Chemical Concentration
The estimated chemical concentration that results from the confirmed detection of the substance by the analytical method below the ML value.

Estuaries
Estuaries means waters, including coastal lagoons, located at the mouths of streams that serve as areas of mixing for fresh and ocean waters. Coastal lagoons and mouths of streams that are temporarily separated from the ocean by sandbars shall be considered estuaries. Estuarine waters shall be considered to extend from a bay or the open ocean to a point upstream where there is no significant mixing of fresh water and seawater. Estuarine waters included, but are not limited to, the Sacramento-San Joaquin Delta, as defined in Water Code section 12220, Suisun Bay, Carquinez Strait downstream to the Carquinez Bridge, and appropriate areas of the Smith, Mad, Eel, Noyo, Russian, Klamath, San Diego, and Otay rivers. Estuaries do not include inland surface waters or ocean waters.

Inland Surface Waters
All surface waters of the State that do not include the ocean, enclosed bays, or estuaries.

Instantaneous Maximum Effluent Limitation
The highest allowable value for any single grab sample or aliquot (i.e., each grab sample or aliquot is independently compared to the instantaneous maximum limitation).

Instantaneous Minimum Effluent Limitation
The lowest allowable value for any single grab sample or aliquot (i.e., each grab sample or aliquot is independently compared to the instantaneous minimum limitation).

Maximum Daily Effluent Limitation (MDEL)
The highest allowable daily discharge of a pollutant, over a calendar day (or 24-hour period). For pollutants with limitations expressed in units of mass, the daily discharge is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the daily discharge is calculated as the arithmetic mean measurement of the pollutant over the day.

Median
The middle measurement in a set of data. The median of a set of data is found by first arranging the measurements in order of magnitude (either increasing or decreasing order). If the number of measurements (n) is odd, then the median = $X_{(n+1)/2}$. If n is even, then the median = $(X_{n/2} + X_{(n/2)+1})/2$ (i.e., the midpoint between the $n/2$ and $n/2+1$).

Method Detection Limit (MDL)
MDL is the minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero, as defined in 40 CFR Part 136, Attachment B, revised as of 3 July 1999.

Minimum Level (ML)
ML is the concentration at which the entire analytical system must give a recognizable signal and acceptable calibration point. The ML is the concentration in a sample that is equivalent to the concentration of the lowest calibration standard analyzed by a specific analytical procedure, assuming that all the method specified sample weights, volumes, and processing steps have been followed.

Mixing Zone
Mixing Zone is a limited volume of receiving water that is allocated for mixing with a wastewater discharge where water quality criteria can be exceeded without causing adverse effects to the overall water body.

Not Detected (ND)
Sample results which are less than the laboratory's MDL.

Ocean Waters
The territorial marine waters of the State as defined by California law to the extent these waters are outside of enclosed bays, estuaries, and coastal lagoons. Discharges to ocean waters are regulated in accordance with the State Water Board's California Ocean Plan.

Persistent Pollutants
Persistent pollutants are substances for which degradation or decomposition in the environment is nonexistent or very slow.

Pollutant Minimization Program (PMP)
PMP means waste minimization and pollution prevention actions that include, but are not limited to, product substitution, waste stream recycling, alternative waste management methods, and education of the public and businesses. The goal of the PMP shall be to reduce

all potential sources of a priority pollutant(s) through pollutant minimization (control) strategies, including pollution prevention measures as appropriate, to maintain the effluent concentration at or below the water quality-based effluent limitation. Pollution prevention measures may be particularly appropriate for persistent bioaccumulative priority pollutants where there is evidence that beneficial uses are being impacted. The Central Valley Water Board may consider cost effectiveness when establishing the requirements of a PMP. The completion and implementation of a Pollution Prevention Plan, if required pursuant to Water Code section 13263.3(d), shall be considered to fulfill the PMP requirements.

Pollution Prevention
Pollution Prevention means any action that causes a net reduction in the use or generation of a hazardous substance or other pollutant that is discharged into water and includes, but is not limited to, input change, operational improvement, production process change, and product reformulation (as defined in Water Code section 13263.3). Pollution prevention does not include actions that merely shift a pollutant in wastewater from one environmental medium to another environmental medium, unless clear environmental benefits of such an approach are identified to the satisfaction of the State or Regional Water Board.

Reporting Level (RL)
The RL is based on the proper application of method-based analytical procedures for sample preparation and the absence of any matrix interferences. Other factors may be applied to the RL depending on the specific sample preparation steps employed. For example, the treatment typically applied in cases where there are matrix-effects is to dilute the sample or sample aliquot by a factor of ten. In such cases, this additional factor must be applied in the computation of the RL.

Satellite Collection System
The portion, if any, of a sanitary sewer system owned or operated by a different public agency than the agency that owns and operates the wastewater treatment facility that a sanitary sewer system is tributary to.

Source of Drinking Water
Any water designated as municipal or domestic supply (MUN) in a Regional Water Board Basin Plan.

Standard Deviation (σ)
Standard Deviation is a measure of variability that is calculated as follows:

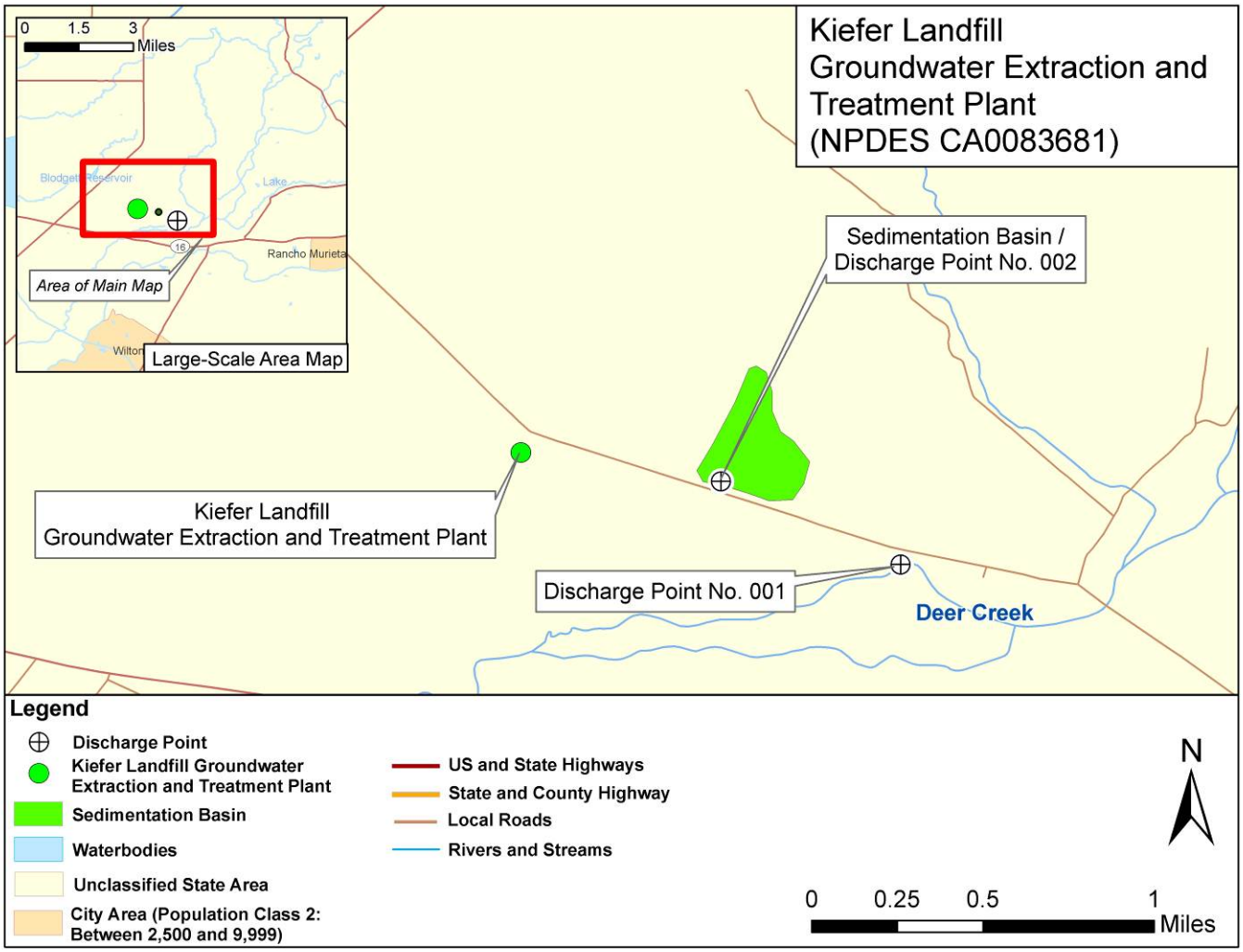
$$\sigma = (\sum[(x - \mu)^2]/(n - 1))^{0.5}$$

where:
x is the observed value;
μ is the arithmetic mean of the observed values; and
n is the number of samples.

Toxicity Reduction Evaluation (TRE)
TRE is a study conducted in a step-wise process designed to identify the causative agents of effluent or ambient toxicity, isolate the sources of toxicity, evaluate the effectiveness of toxicity control options, and then confirm the reduction in toxicity. The first steps of the TRE consist of the collection of data relevant to the toxicity, including additional toxicity testing, and an

evaluation of facility operations and maintenance practices, and best management practices. A Toxicity Identification Evaluation (TIE) may be required as part of the TRE, if appropriate. (A TIE is a set of procedures to identify the specific chemical(s) responsible for toxicity. These procedures are performed in three phases (characterization, identification, and confirmation) using aquatic organism toxicity tests.)

ATTACHMENT B – MAPS



SITE LOCATION MAP

COUNTY OF SACRAMENTO, DEPARTMENT OF WASTE MANAGEMENT AND RECYCLING
KIEFER LANDFILL GROUNDWATER EXTRACTION AND TREATMENT PLANT
SACRAMENTO COUNTY

ATTACHMENT C – FLOW SCHEMATIC

FROM
EXTRACTON
WELLS

FROM
EXTRACTON
WELLS

ATTACHMENT D – STANDARD PROVISIONS

I. STANDARD PROVISIONS – PERMIT COMPLIANCE

A. Duty to Comply

1. The Discharger must comply with all of the conditions of this Order. Any noncompliance constitutes a violation of the Clean Water Act (CWA) and the California Water Code (Water Code) and is grounds for enforcement action, for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application. (40 CFR 122.41(a).)

2. The Discharger shall comply with effluent standards or prohibitions established under section 307(a) of the CWA for toxic pollutants and with standards for sewage sludge use or disposal established under section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions, even if this Order has not yet been modified to incorporate the requirement. (40 CFR 122.41(a)(1).)

B. Need to Halt or Reduce Activity Not a Defense

It shall not be a defense for a Discharger in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this Order. (40 CFR 122.41(c))

C. Duty to Mitigate

The Discharger shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this Order that has a reasonable likelihood of adversely affecting human health or the environment. (40 CFR 122.41(d))

D. Proper Operation and Maintenance

The Discharger shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the Discharger to achieve compliance with the conditions of this Order. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of backup or auxiliary facilities or similar systems that are installed by a Discharger only when necessary to achieve compliance with the conditions of this Order. (40 CFR 122.41(e).)

E. Property Rights

1. This Order does not convey any property rights of any sort or any exclusive privileges. (40 CFR 122.41(g))

2. The issuance of this Order does not authorize any injury to persons or property or invasion of other private rights, or any infringement of state or local law or regulations. (40 CFR 122.5(c))

F. Inspection and Entry

The Discharger shall allow the Regional Water Board, State Water Board, United States Environmental Protection Agency (USEPA), and/or their authorized representatives (including an authorized contractor acting as their representative), upon the presentation of credentials and other documents, as may be required by law, to (40 CFR 122.41(i); Water Code section 13383):

1. Enter upon the Discharger's premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this Order (40 CFR 122.41(i)(1));

2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Order (40 CFR 122.41(i)(2));

3. Inspect and photograph, at reasonable times, any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order (40 CFR 122.41(i)(3)); and

4. Sample or monitor, at reasonable times, for the purposes of assuring Order compliance or as otherwise authorized by the CWA or the Water Code, any substances or parameters at any location. (40 CFR 122.41(i)(4))

G. Bypass

1. Definitions

a. “Bypass” means the intentional diversion of waste streams from any portion of a treatment facility. (40 CFR 122.41(m)(1)(i))

b. “Severe property damage” means substantial physical damage to property, damage to the treatment facilities, which causes them to become inoperable, or substantial and permanent loss of natural resources that can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production. (40 CFR 122.41(m)(1)(ii))

2. Bypass not exceeding limitations. The Discharger may allow any bypass to occur which does not cause exceedances of effluent limitations, but only if it is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions listed in Standard Provisions – Permit Compliance I.G.3, I.G.4, and I.G.5 below. (40 CFR 122.41(m)(2))

3. Prohibition of bypass. Bypass is prohibited, and the Regional Water Board may take enforcement action against a Discharger for bypass, unless (40 CFR 122.41(m)(4)(i)):

a. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage (40 CFR 122.41(m)(4)(i)(A));

b. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass that occurred during normal periods of equipment downtime or preventive maintenance (40 CFR 122.41(m)(4)(i)(B)); and

c. The Discharger submitted notice to the Regional Water Board as required under Standard Provisions – Permit Compliance I.G.5 below. (40 CFR 122.41(m)(4)(i)(C))

4. The Regional Water Board may approve an anticipated bypass, after considering its adverse effects, if the Regional Water Board determines that it will meet the three conditions listed in Standard Provisions – Permit Compliance I.G.3 above. (40 CFR 122.41(m)(4)(ii))

5. Notice

a. Anticipated bypass. If the Discharger knows in advance of the need for a bypass, it shall submit a notice, if possible at least 10 days before the date of the bypass. (40 CFR 122.41(m)(3)(i))

b. Unanticipated bypass. The Discharger shall submit notice of an unanticipated bypass as required in Standard Provisions - Reporting V.E below (24-hour notice). (40 CFR 122.41(m)(3)(ii))

H. Upset

Upset means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the Discharger. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation. (40 CFR 122.41(n)(1))

1. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of Standard Provisions – Permit Compliance I.H.2 below are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review. (40 CFR 122.41(n)(2))

2. Conditions necessary for a demonstration of upset. A Discharger who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs or other relevant evidence that (40 CFR 122.41(n)(3)):

a. An upset occurred and that the Discharger can identify the cause(s) of the upset (40 CFR 122.41(n)(3)(i));

b. The permitted facility was, at the time, being properly operated (40 CFR 122.41(n)(3)(ii));

c. The Discharger submitted notice of the upset as required in Standard Provisions – Reporting V.E.2.b below (24-hour notice) (40 CFR 122.41(n)(3)(iii)); and

d. The Discharger complied with any remedial measures required under Standard Provisions – Permit Compliance I.C above. (40 CFR 122.41(n)(3)(iv))

3. Burden of proof. In any enforcement proceeding, the Discharger seeking to establish the occurrence of an upset has the burden of proof. (40 CFR 122.41(n)(4))

II. STANDARD PROVISIONS – PERMIT ACTION

A. General

This Order may be modified, revoked and reissued, or terminated for cause. The filing of a request by the Discharger for modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any Order condition. (40 CFR 122.41(f))

B. Duty to Reapply

If the Discharger wishes to continue an activity regulated by this Order after the expiration date of this Order, the Discharger must apply for and obtain a new permit. (40 CFR 122.41(b))

C. Transfers

This Order is not transferable to any person except after notice to the Regional Water Board. The Regional Water Board may require modification or revocation and reissuance of the Order to change the name of the Discharger and incorporate such other requirements as may be necessary under the CWA and the Water Code. (40 CFR 122.41(l)(3) and 122.61)

III. STANDARD PROVISIONS – MONITORING

A. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity. (40 CFR 122.41(j)(1))

B. Monitoring results must be conducted according to test procedures under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503 unless other test procedures have been specified in this Order. (40 CFR 122.41(j)(4) and 122.44(i)(1)(iv))

IV. STANDARD PROVISIONS – RECORDS

A. Except for records of monitoring information required by this Order related to the Discharger's sewage sludge use and disposal activities, which shall be retained for a

period of at least 5 years (or longer as required by 40 CFR Part 503), the Discharger shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this Order, and records of all data used to complete the application for this Order, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the Regional Water Board Executive Officer at any time. (40 CFR 122.41(j)(2))

B. Records of monitoring information shall include:

1. The date, exact place, and time of sampling or measurements (40 CFR 122.41(j)(3)(i));
2. The individual(s) who performed the sampling or measurements (40 CFR 122.41(j)(3)(ii));
3. The date(s) analyses were performed (40 CFR 122.41(j)(3)(iii));
4. The individual(s) who performed the analyses (40 CFR 122.41(j)(3)(iv));
5. The analytical techniques or methods used (40 CFR 122.41(j)(3)(v)); and
6. The results of such analyses. (40 CFR 122.41(j)(3)(vi))

C. Claims of confidentiality for the following information will be denied (40 CFR 122.7(b)):

1. The name and address of any permit applicant or Discharger (40 CFR 122.7(b)(1)); and
2. Permit applications and attachments, permits and effluent data. (40 CFR 122.7(b)(2))

V. STANDARD PROVISIONS – REPORTING

A. Duty to Provide Information

The Discharger shall furnish to the Regional Water Board, State Water Board, or USEPA within a reasonable time, any information which the Regional Water Board, State Water Board, or USEPA may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Order or to determine compliance with this Order. Upon request, the Discharger shall also furnish to the Regional Water Board, State Water Board, or USEPA copies of records required to be kept by this Order. (40 CFR 122.41(h); Wat. Code, § 13267)

B. Signatory and Certification Requirements

1. All applications, reports, or information submitted to the Regional Water Board, State Water Board, and/or USEPA shall be signed and certified in accordance with

Standard Provisions – Reporting V.B.2, V.B.3, V.B.4, and V.B.5 below. (40 CFR 122.41(k))

2. All permit applications shall be signed by either a principal executive officer or ranking elected official. For purposes of this provision, a principal executive officer of a federal agency includes: (i) the chief executive officer of the agency, or (ii) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency (e.g., Regional Administrators of USEPA). (40 CFR 122.22(a)(3)).

3. All reports required by this Order and other information requested by the Regional Water Board, State Water Board, or USEPA shall be signed by a person described in Standard Provisions – Reporting V.B.2 above, or by a duly authorized representative of that person. A person is a duly authorized representative only if:

a. The authorization is made in writing by a person described in Standard Provisions – Reporting V.B.2 above (40 CFR 122.22(b)(1));

b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.) (40 CFR 122.22(b)(2)); and

c. The written authorization is submitted to the Regional Water Board and State Water Board. (40 CFR 122.22(b)(3))

4. If an authorization under Standard Provisions – Reporting V.B.3 above is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of Standard Provisions – Reporting V.B.3 above must be submitted to the Regional Water Board and State Water Board prior to or together with any reports, information, or applications, to be signed by an authorized representative. (40 CFR 122.22(c))

5. Any person signing a document under Standard Provisions – Reporting V.B.2 or V.B.3 above shall make the following certification:

"*I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.*" (40 CFR 122.22(d))

C. Monitoring Reports

1. Monitoring results shall be reported at the intervals specified in the Monitoring and Reporting Program (Attachment E) in this Order. (40 CFR 122.22(l)(4))

2. Monitoring results must be reported on a Discharge Monitoring Report (DMR) form or forms provided or specified by the Regional Water Board or State Water Board for reporting results of monitoring of sludge use or disposal practices. (40 CFR 122.41(l)(4)(i))

3. If the Discharger monitors any pollutant more frequently than required by this Order using test procedures approved under 40 CFR Part 136 or, in the case of sludge use or disposal, approved under 40 CFR Part 136 unless otherwise specified in 40 CFR Part 503, or as specified in this Order, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR or sludge reporting form specified by the Regional Water Board. (40 CFR 122.41(l)(4)(ii))

4. Calculations for all limitations, which require averaging of measurements, shall utilize an arithmetic mean unless otherwise specified in this Order. (40 CFR 122.41(l)(4)(iii))

D. Compliance Schedules

Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of this Order, shall be submitted no later than 14 days following each schedule date. (40 CFR 122.41(l)(5))

E. Twenty-Four Hour Reporting

1. The Discharger shall notify the Office of Emergency Services of any noncompliance that may endanger health or the environment within two (2) hours from the time the Discharger becomes aware of the circumstances. The Discharger shall notify the Central Valley Water Board of the noncompliance by telephone or fax within 24 hours from the time the Discharger becomes aware of the circumstances. A written submission shall also be provided to the Central Valley Water Board within five (5) days of the time the Discharger becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. (40 CFR 122.41(l)(6)(i))

2. The following shall be included as information that must be reported within 24 hours under this paragraph (40 CFR 122.41(l)(6)(ii)):

   a. Any unanticipated bypass that exceeds any effluent limitation in this Order. (40 CFR 122.41(l)(6)(ii)(A))

   b. Any upset that exceeds any effluent limitation in this Order. (40 CFR 122.41(l)(6)(ii)(B))

3. The Regional Water Board may waive the above-required written report under this provision on a case-by-case basis if an oral report has been received within 24 hours. (40 CFR 122.41(l)(6)(iii))

F. Planned Changes

The Discharger shall give notice to the Regional Water Board as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required under this provision only when (40 CFR 122.41(l)(1)):

1. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR 122.29(b) (40 CFR 122.41(l)(1)(i)); or

2. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants that are subject neither to effluent limitations in this Order nor to notification requirements under 40 CFR 122.42(a)(1) (see Additional Provisions—Notification Levels VII.A.1). (40 CFR 122.41(l)(1)(ii)); or

3. The alteration or addition results in a significant change in the Discharger's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan. (40 CFR 122.41(l)(1)(iii)).

G. Anticipated Noncompliance

The Discharger shall give advance notice to the Regional Water Board or State Water Board of any planned changes in the permitted facility or activity that may result in noncompliance with General Order requirements. (40 CFR 122.41(l)(2))

H. Other Noncompliance

The Discharger shall report all instances of noncompliance not reported under Standard Provisions – Reporting V.C, V.D, and V.E above at the time monitoring reports are submitted. The reports shall contain the information listed in Standard Provision – Reporting V.E above. (40 CFR 122.41(l)(7))

I. Other Information

When the Discharger becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Regional Water Board, State Water Board, or USEPA, the Discharger shall promptly submit such facts or information. (40 CFR 122.41(l)(8))

VI. STANDARD PROVISIONS – ENFORCEMENT

A. The Regional Water Board is authorized to enforce the terms of this permit under several provisions of the Water Code, including, but not limited to, sections 13385, 13386, and 13387.

VII. ADDITIONAL PROVISIONS – NOTIFICATION LEVELS

A. Non-Municipal Facilities

Existing manufacturing, commercial, mining, and silvicultural Dischargers shall notify the Regional Water Board as soon as they know or have reason to believe (40 CFR 122.42(a)):

1. That any activity has occurred or will occur that would result in the discharge, on a routine or frequent basis, of any toxic pollutant that is not limited in this Order, if that discharge will exceed the highest of the following "notification levels" (40 CFR 122.42(a)(1)):

a. 100 micrograms per liter (µg/L) (40 CFR 122.42(a)(1)(i));

b. 200 µg/L for acrolein and acrylonitrile; 500 µg/L for 2,4-dinitrophenol and 2-methyl-4,6-dinitrophenol; and 1 milligram per liter (mg/L) for antimony (40 CFR 122.42(a)(1)(ii));

c. Five (5) times the maximum concentration value reported for that pollutant in the Report of Waste Discharge (40 CFR 122.42(a)(1)(iii)); or

d. The level established by the Regional Water Board in accordance with 40 CFR 122.44(f). (40 CFR 122.42(a)(1)(iv))

2. That any activity has occurred or will occur that would result in the discharge, on a non-routine or infrequent basis, of any toxic pollutant that is not limited in this Order, if that discharge will exceed the highest of the following “notification levels" (40 CFR 122.42(a)(2)):

a. 500 micrograms per liter (µg/L) (40 CFR 122.42(a)(2)(i));

b. 1 milligram per liter (mg/L) for antimony (40 CFR 122.42(a)(2)(ii));

c. Ten (10) times the maximum concentration value reported for that pollutant in the Report of Waste Discharge (40 CFR 122.42(a)(2)(iii)); or

d. The level established by the Regional Water Board in accordance with section 122.44(f). (40 CFR 122.42(a)(2)(iv))

ATTACHMENT E – MONITORING AND REPORTING PROGRAM

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ATTACHMENT E – MONITORING AND REPORTING PROGRAM

Title 40 of the Code of Federal Regulations (CFR), section 122.48 (40 CFR 122.48) requires that all NPDES permits specify monitoring and reporting requirements. California Water Code (Water Code) sections 13267 and 13383 also authorize the Regional Water Quality Control Board, Central Valley Region (Central Valley Water Board) to require technical and monitoring reports. This Monitoring and Reporting Program establishes monitoring and reporting requirements, which implement the federal and California regulations.

I. GENERAL MONITORING PROVISIONS

A. Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge. All samples shall be taken at the monitoring locations specified below and, unless otherwise specified, before the monitored flow joins or is diluted by any other waste stream, body of water, or substance. Monitoring locations shall not be changed without notification to and the approval of the Central Valley Water Board.

B. Effluent samples shall be taken downstream of the last addition of wastes to the treatment or discharge works where a representative sample may be obtained prior to mixing with the receiving waters. Samples shall be collected at such a point and in such a manner to ensure a representative sample of the discharge.

C. Chemical, bacteriological, and bioassay analyses of any material required by this Order shall be conducted by a laboratory certified for such analyses by the Department of Public Health (DPH). Laboratories that perform sample analyses must be identified in all monitoring reports submitted to the Central Valley Water Board. In the event a certified laboratory is not available to the Discharger for any onsite field measurements such as pH, dissolved oxygen, turbidity, temperature and residual chlorine, such analyses performed by a noncertified laboratory will be accepted provided that the analysis is in accordance with 40 CFR 136 or an USEPA approved alternative test procedure, and a Quality Assurance-Quality Control Program is instituted by the laboratory. A manual containing the steps followed in this program for any onsite field measurements such as pH, dissolved oxygen, turbidity, temperature and residual chlorine must be kept onsite in the treatment facility laboratory and shall be available for inspection by Central Valley Water Board staff. The Discharger must demonstrate sufficient capability (qualified and trained employees, properly calibrated and maintained field instruments, etc.) to adequately perform these field measurements. The Quality Assurance-Quality Control Program must conform to USEPA guidelines or to procedures approved by the Central Valley Water Board.

D. Appropriate flow measurement devices and methods consistent with accepted scientific practices shall be selected and used to ensure the accuracy and reliability of measurements of the volume of monitored discharges. All monitoring instruments and devices used by the Discharger to fulfill the prescribed monitoring program shall be properly maintained and calibrated as necessary, at least yearly, to ensure their continued accuracy. All flow measurement devices shall be calibrated at least once per year to ensure continued accuracy of the devices.

E. Monitoring results, including noncompliance, shall be reported at intervals and in a manner specified in this Monitoring and Reporting Program.

F. Laboratories analyzing monitoring samples shall be certified by DPH, in accordance with the provision of Water Code section 13176, and must include quality assurance/quality control data with their reports.

G. The Discharger shall conduct analysis on any sample provided by USEPA as part of the Discharge Monitoring Quality Assurance (DMQA) program. The results of any such analysis shall be submitted to USEPA's DMQA manager.

H. The Discharger shall file with the Central Valley Water Board technical reports on self-monitoring performed according to the detailed specifications contained in this Monitoring and Reporting Program.

I. The results of all monitoring required by this Order shall be reported to the Central Valley Water Board, and shall be submitted in such a format as to allow direct comparison with the limitations and requirements of this Order. Unless otherwise specified, discharge flows shall be reported in terms of the monthly average and the daily maximum discharge flows.

II. MONITORING LOCATIONS

The Discharger shall establish the following monitoring locations to demonstrate compliance with the effluent limitations, discharge specifications, and other requirements in this Order:

Table E-1. Monitoring Station Locations

Discharge Point Name	Monitoring Location Name	Monitoring Location Description
001	EFF-001	After all treatment units, prior to discharge to Deer Creek. (38° 30’ 11” N, 121° 10’ 25” W)
002	EFF-002	After all treatment units, prior to discharge to the on-site sedimentation basin. (38° 30’ 25” N, 121° 10’ 51” W)
--	RSW-001	700 feet upstream of the point of discharge to Deer Creek. (38° 30’ 16” N, 121° 10’ 32” W)
--	RSW-002	400 feet downstream of the point of discharge to Deer Creek. (38° 30’ 18” N, 121° 10’ 44” W)

III. INFLUENT MONITORING REQUIREMENTS – NOT APPLICABLE

IV. EFFLUENT MONITORING REQUIREMENTS

A. Monitoring Location EFF-001

1. The Discharger shall monitor the effluent at Monitoring Location EFF-001 as follows. If more than one analytical test method is listed for a given parameter, the Discharger must select from the listed methods and corresponding Minimum Level:

Table E-2. Effluent Monitoring

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow	MGD	Meter	Continuous[1]	--
pH	standard units	Grab	1/Week	[2,3]
Selenium, Total Recoverable[13]	µg/L	Grab	1/Month[5]	[2,4]
Chlorine, Total Residual	mg/L	Grab or Meter	1/Month or Continuous[6]	[2,3,7]
Dissolved Oxygen	mg/L	Grab	1/Week	[2,3]
Electrical Conductivity @ 25°C	µmhos/cm	Grab	1/Week	[2,3]
Hardness, Total (as $CaCO_3$)	mg/L	Grab	1/Month	[2]
Manganese, Total Recoverable	µg/L	Grab	1/Quarter	[2]
Temperature	°F (°C)	Grab	1/Week	[2,3]
Total Dissolved Solids	mg/L	Grab	1/Week	[2]
Turbidity	NTU	Grab	1/Week	[2,3]
Volatile Organic Compounds of Concern[8,13]	µg/L	Grab	1/Month	[2,4]
Other Volatile Organic Compounds[9,13]	µg/L	Grab	1/Year	[2,4]
Priority Pollutants and Other Constituents of Concern[10,13]	µg/L	Grab	2/Permit Term[11]	[2,4,12]

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method

[1] As required in section X.B.6.b of this MRP, the Discharger must report when the Facility is discharging to Deer Creek from Discharge Point No. 001, including the date and time that the discharge started and stopped.

[2] Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136 or an EPA approved Alternate Testing Procedure; where no methods are specified for a given pollutant that meet a specific reporting limit or method performance standard, an alternate method can be approved by the Central Valley Water Board.

[3] A hand-held field meter may be used, provided the meter utilizes a USEPA-approved algorithm/method and is calibrated and maintained in accordance with the manufacturer's instructions. A calibration and maintenance log for each meter used for monitoring required by this Monitoring and Reporting Program shall be maintained at the Facility.

[4] For priority pollutant constituents with effluent limitations, detection limits shall be below the effluent limitations. If the lowest minimum level (ML) published in Appendix 4 of the Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (State Implementation Plan or SIP) is not below the effluent limitation, the detection limit shall be the lowest ML. For priority pollutant constituents without effluent limitations, the detection limits shall be equal to or less than the lowest ML published in Appendix 4 of the SIP.

[5] Monthly effluent monitoring for selenium is only required from 1 July 2013 through 30 June 2014, per the Constituent Study required in Section VI.C.2.b of the Limitations and Discharge Requirements.

[6] Continuous chlorine residual monitoring is required for a minimum of 24-hours after the discharge to Deer Creek resumes following well and groundwater treatment system maintenance events in which chlorine is used.

[7] Total chlorine residual must be monitored with a method sensitive to and accurate at the permitted level of 0.01 mg/L.

[8] Volatile organic compounds of concern include vinyl chloride, tetrachloroethylene, trichloroethylene, trans-1,2-dichloroethylene, 1,1-dichloroethane, dichlorodifluoromethane, trichlorofluoromethane, methylene chloride, chloroform, and cis-1,2-dichloroethylene.

[9] All volatile organic compounds listed in EPA Method 502.2, as listed in Attachment I.

[10] See list of Priority Pollutants and Other Constituents of Concern in Attachment H.

[11] In accordance with the Effluent and Receiving Water Characterization Study required in in Section X.D.3, priority pollutants and other constituents of concern shall be sampled twice during the third or fourth year following the date of permit adoption and shall be conducted concurrently with upstream receiving water monitoring for priority pollutants and other constituents of concern. See Attachment H for more detailed requirements related to performing the priority pollutant and other constituents of concern monitoring.

[12] Sampling and analysis of bis (2-ethylhexyl) phthalate shall be conducted using ultra-clean techniques that eliminate the possibility of sample contamination.

[13] The maximum required Reporting Level is specified in Attachment H, Table H-1, Priority Pollutants and Other Constituents of Concern.

V. WHOLE EFFLUENT TOXICITY TESTING REQUIREMENTS

A. Acute Toxicity Testing. The Discharger shall conduct acute toxicity testing to determine whether the effluent is contributing acute toxicity to the receiving water. The Discharger shall meet the following acute toxicity testing requirements:

1. *Monitoring Frequency* – The Discharger shall perform quarterly acute toxicity testing.

2. *Sample Types* – For static non-renewal and static renewal testing, the samples shall be grab samples and shall be representative of the volume and quality of the discharge. The effluent samples shall be taken at Monitoring Location EFF-001.

3. *Test Species* – Test species shall be fathead minnows (*Pimephales promelas*).

4. *Methods* – The acute toxicity testing samples shall be analyzed using EPA-821-R-02-012, Fifth Edition. Temperature, total residual chlorine, and pH shall be recorded at the time of sample collection. No pH adjustment may be made unless approved by the Executive Officer.

5. *Test Failure* – If an acute toxicity test does not meet all test acceptability criteria, as specified in the test method, the Discharger must re-sample and re-test as soon as possible, not to exceed 7 days following notification of test failure.

B. **Chronic Toxicity Testing.** The Discharger shall conduct three species chronic toxicity testing to determine whether the effluent is contributing chronic toxicity to the receiving water. The Discharger shall meet the following chronic toxicity testing requirements:

1. *Monitoring Frequency –* The Discharger shall perform quarterly three species chronic toxicity testing.

2. *Sample Types* – Effluent samples shall be grab samples and shall be representative of the volume and quality of the discharge. The effluent samples shall be taken at Monitoring Location EFF-001. The receiving water control shall be a grab sample obtained from Monitoring Location RSW-001, as identified in this Monitoring and Reporting Program.

3. *Sample Volumes* – Adequate sample volumes shall be collected to provide renewal water to complete the test in the event that the discharge is intermittent.

4. *Test Species* – Chronic toxicity testing measures sublethal (e.g., reduced growth, reproduction) and/or lethal effects to test organisms exposed to an effluent compared to that of the control organisms. The Discharger shall conduct chronic toxicity tests with:

   - The cladoceran, water flea, *Ceriodaphnia dubia* (survival and reproduction test);
   - The fathead minnow, *Pimephales promelas* (larval survival and growth test); and
   - The green alga, *Selenastrum capricornutum* (growth test).

5. *Methods* – The presence of chronic toxicity shall be estimated as specified in *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition*, EPA/821-R-02-013, October 2002.

6. *Reference Toxicant* – As required by the SIP, all chronic toxicity tests shall be conducted with concurrent testing with a reference toxicant and shall be reported with the chronic toxicity test results.

7. *Dilutions* – For regular and accelerated chronic toxicity monitoring, it is not necessary to perform the test using a dilution series. The test may be performed using 100% effluent and two controls. For TRE monitoring, the chronic toxicity testing shall be performed using the dilution series identified in Table E-3, below, unless an alternative dilution series is detailed in the submitted TRE Action Plan. The receiving water control shall be used as the diluent, unless use of an alternative

diluent is detailed in the submitted TRE Action Plan, or when the receiving water is toxic.

Table E-3. Chronic Toxicity Testing Dilution Series

Sample	Dilutions (%)					Controls	
	100	75	50	25	12.5	Receiving Water	Laboratory Water
% Effluent	100	75	50	25	12.5	0	0
% Receiving Water	0	25	50	75	87.5	100	0
% Laboratory Water	0	0	0	0	0	0	100

8. *Test Failure* – The Discharger must re-sample and re-test as soon as possible, but no later than fourteen (14) days after receiving notification of a test failure. A test failure is defined as follows:

   a. The reference toxicant test or the effluent test does not meet all test acceptability criteria as specified in the *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition*, EPA/821-R-02-013, October 2002 (Method Manual), and its subsequent amendments or revisions; or

   b. The percent minimum significant difference (PMSD) measured for the test exceeds the upper PMSD bound variability criterion in Table 6 on page 52 of the Method Manual. (A retest is only required in this case if the test results do not exceed the monitoring trigger specified in the Special Provision at section VI. 2.a.iii. of the Order.)

C. WET Testing Notification Requirements. The Discharger shall notify the Central Valley Water Board within 24-hours after the receipt of test results exceeding the monitoring trigger during regular or accelerated monitoring, or an exceedance of the acute toxicity effluent limitation.

D. WET Testing Reporting Requirements. All toxicity test reports shall include the contracting laboratory's complete report provided to the Discharger and shall be in accordance with the appropriate "Report Preparation and Test Review" sections of the method manuals. At a minimum, whole effluent toxicity monitoring shall be reported as follows:

1. **Chronic WET Reporting.** Regular chronic toxicity monitoring results shall be reported to the Central Valley Water Board with the self-monitoring reports that are required to be submitted on the first day of the second calendar month following month of sampling, and shall contain, at minimum:

   a. The results expressed in TUc, measured as 100/NOEC, and also measured as 100/LC50, 100/EC25, 100/IC25, and 100/IC50, as appropriate.

   b. The statistical methods used to calculate endpoints;

c. The statistical output page, which includes the calculation of the percent minimum significant difference (PMSD);

d. The dates of sample collection and initiation of each toxicity test; and

e. The results compared to the numeric toxicity monitoring trigger.

Additionally, the monthly discharger self-monitoring reports shall contain an updated chronology of chronic toxicity test results expressed in TUc, and organized by test species, type of test (survival, growth or reproduction), and monitoring frequency, i.e., either quarterly, monthly, accelerated, or Toxicity Reduction Evaluation (TRE).

2. **Acute WET Reporting.** Acute toxicity test results shall be submitted with the monthly discharger self-monitoring reports and reported as percent survival.

3. **TRE Reporting.** Reports for TREs shall be submitted in accordance with the schedule contained in the Discharger's approved TRE Workplan, or as amended by the Discharger's TRE Action Plan.

4. **Quality Assurance (QA).** The Discharger must provide the following information for QA purposes:

a. Results of the applicable reference toxicant data with the statistical output page giving the species, NOEC, LOEC, type of toxicant, dilution water used, concentrations used, PMSD, and dates tested.

b. The reference toxicant control charts for each endpoint, which include summaries of reference toxicant tests performed by the contracting laboratory.

c. Any information on deviations or problems encountered and how they were dealt with.

VI. LAND DISCHARGE MONITORING REQUIREMENTS

A. Monitoring Location EFF-002

1. The Discharger shall monitor the effluent at Monitoring Location EFF-002 when discharging to the sedimentation basin, as follows:

Table E-4. Land Discharge Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow Volume	million gallons	Calculated	1	2
pH	standard units	Grab	1	2, 3
Chlorine, Total Residual	mg/L	Grab	1	2, 3
Dissolved Oxygen	mg/L	Grab	1	2, 3
Electrical Conductivity @ 25°C	µmhos/cm	Grab	1	2,3

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Total Dissolved Solids	mg/L	Grab	[1]	[2]
Volatile Organic Compounds of Concern[4]	µg/L	Grab	[1]	[2]
Lead, Total Recoverable	µg/L	Grab	[1]	[2]
Selenium, Total Recoverable	µg/L	Grab	[1]	[2]
Manganese, Total Recoverable	µg/L	Grab	[1]	[2]

[1] Samples shall be collected once during each discharge to the sedimentation basin. As required in section X.B.6.b of this MRP, the Discharger must report the date and time that the discharge to the sedimentation basin occurs.

[2] Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136 or an EPA approved Alternate Testing Procedure; where no methods are specified for a given pollutant that meet a specific reporting limit or method performance standard, an alternate method can be approved by the Central Valley Water Board.

[3] A hand-held field meter may be used, provided the meter utilizes a USEPA-approved algorithm/method and is calibrated and maintained in accordance with the manufacturer's instructions. A calibration and maintenance log for each meter used for monitoring required by this Monitoring and Reporting Program shall be maintained at the Facility.

[4] Volatile organic compounds of concern include vinyl chloride, tetrachloroethylene, trichloroethylene, trans-1,2-dichloroethylene, 1,1-dichloroethane, dichlorodifluoromethane, trichlorofluoromethane, methylene chloride, chloroform, and cis-1,2-dichloroethylene.

VII. RECLAMATION MONITORING REQUIREMENTS – NOT APPLICABLE

VIII. RECEIVING WATER MONITORING REQUIREMENTS – SURFACE WATER AND GROUNDWATER

A. Monitoring Location RSW-001 and RSW-002

1. The Discharger shall monitor Deer Creek at Monitoring Locations RSW-001 and RSW-002 as follows:

Table E-5. Receiving Water Monitoring Requirements

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Flow	cfs	Estimate	1/Month[1]	--
pH	standard units	Grab	1/Month	[2, 3]
Dissolved Oxygen	mg/L	Grab	1/Month	[2,3]
Electrical Conductivity @ 25°C	µmhos/cm	Grab	1/Month	[2, 3]
Hardness, Total (as $CaCO_3$)	mg/L	Grab	1/Month	[2]
Temperature	°F (°C)	Grab	1/Month	[2,3]
Turbidity	NTU	Grab	1/Month	[2,3]
Priority Pollutants and Other Constituents of	µg/L	Grab	2/Permit Term[5]	[2, 6, 7]

Parameter	Units	Sample Type	Minimum Sampling Frequency	Required Analytical Test Method
Concern[4]				

[1] Estimate of receiving water flow, recorded for each day of sample collection. A nearby gauging station may be used, if available.

[2] Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136 or an EPA approved Alternate Testing Procedure; where no methods are specified for a given pollutant that meet a specific reporting limit or method performance standard, an alternate method can be approved by the Central Valley Water Board.

[3] A hand-held field meter may be used, provided the meter utilizes a USEPA-approved algorithm/method and is calibrated and maintained in accordance with the manufacturer's instructions. A calibration and maintenance log for each meter used for monitoring required by this Monitoring and Reporting Program shall be maintained at the Facility.

[4] See list of Priority Pollutants and Other Constituents of Concern in Attachment H. The maximum required Reporting Level is specified in Attachment H, Table H-1, Priority Pollutants and Other Constituents of Concern.

[5] In accordance with the Effluent and Receiving Water Characterization Study required in in Section X.D.3, priority pollutants and other constituents of concern shall be sampled twice during the third or fourth year following the date of permit adoption at Monitoring Location RSW-001 and shall be conducted concurrently with effluent sampling. See Attachment H for more detailed requirements related to performing priority pollutants and other constituents of concern monitoring.

[6] Pollutants shall be analyzed using the analytical methods described in 40 CFR Part 136; for priority pollutants the methods must meet the lowest MLs specified in Appendix 4 of the SIP, where no methods are specified for a given pollutant, by methods approved by this Central Valley Water Board or the State Water Board.

[7] Sampling and analysis of bis (2-ethylhexyl) phthalate shall be conducted using ultra-clean techniques that eliminate the possibility of sample contamination.

2. In conducting the receiving water sampling, a log shall be kept of the receiving water conditions throughout the reach bounded by Monitoring Locations RSW-001 and RSW-002. Attention shall be given to the presence or absence of:

a. Floating or suspended matter;
b. Discoloration;
c. Bottom deposits;
d. Aquatic life;
e. Visible Films, sheens, or coatings;
f. Fungi, slimes, or objectionable growths; and
g. Potential nuisance conditions.

Notes on receiving water conditions shall be summarized in the monitoring report.

B. Groundwater Monitoring – Not Applicable

IX. OTHER MONITORING REQUIREMENTS – NOT APPLICABLE

X. REPORTING REQUIREMENTS

A. General Monitoring and Reporting Requirements

1. The Discharger shall comply with all Standard Provisions (Attachment D) related to monitoring, reporting, and recordkeeping.

2. Upon written request of the Central Valley Water Board, the Discharger shall submit a summary monitoring report. The report shall contain both tabular and graphical summaries of the monitoring data obtained during the previous year(s).

3. **Compliance Time Schedules.** For compliance time schedules included in the Order, the Discharger shall submit to the Central Valley Water Board, on or before each compliance due date, the specified document or a written report detailing compliance or noncompliance with the specific date and task. If noncompliance is reported, the Discharger shall state the reasons for noncompliance and include an estimate of the date when the Discharger will be in compliance. The Discharger shall notify the Central Valley Water Board by letter when it returns to compliance with the compliance time schedule.

4. The Discharger shall report to the Central Valley Water Board any toxic chemical release data it reports to the State Emergency Response Commission within 15 days of reporting the data to the Commission pursuant to section 313 of the "*Emergency Planning and Community Right to Know Act*" of 1986.

B. Self Monitoring Reports (SMRs)

1. The Discharger shall continue to submit eSMRs using the State Water Board's CIWQS Program Web site (http:www.waterboards.ca.gov/ciwqs/index.html). The Discharger shall maintain sufficient staffing and resources to ensure it submits eSMRs during the effective duration of this Order. This includes provision of training and supervision of individuals (e.g., Discharger personnel or consultant) on how to prepare and submit eSMRs.

2. Monitoring periods and reporting for all required monitoring shall be completed according to the following schedule:

Table E-6. Monitoring Periods and Reporting Schedule

Sampling Frequency	Monitoring Period Begins On…	Monitoring Period	SMR Due Date
Continuous	Permit effective date	All	First day of second calendar month following month of sampling
1/Week	Permit effective date	Sunday through Saturday	First day of second calendar month following month of sampling
1/Month	Permit effective date	First day of calendar month through last day of calendar month	First day of second calendar month following month of sampling
1/Quarter	Permit effective date	1 January through 31 March 1 April through 30 June 1 July through 30 September 1 October through 31 December	First day of second calendar month following month of sampling
1/Permit Term	Permit effective date	Once during the third or fourth year following the date of permit adoption	First day of second calendar month following month of sampling

Sampling Frequency	Monitoring Period Begins On…	Monitoring Period	SMR Due Date

3. **Reporting Protocols.** The Discharger shall report with each sample result the applicable reported Reporting Level (RL) and the current Method Detection Limit (MDL), as determined by the procedure in 40 CFR Part 136.

   The Discharger shall report the results of analytical determinations for the presence of chemical constituents in a sample using the following reporting protocols:

   a. Sample results greater than or equal to the RL shall be reported as measured by the laboratory (i.e., the measured chemical concentration in the sample).

   b. Sample results less than the RL, but greater than or equal to the laboratory's MDL, shall be reported as "Detected, but Not Quantified," or DNQ. The estimated chemical concentration of the sample shall also be reported.

   For the purposes of data collection, the laboratory shall write the estimated chemical concentration next to DNQ as well as the words "Estimated Concentration" (may be shortened to "Est. Conc."). The laboratory may, if such information is available, include numerical estimates of the data quality for the reported result. Numerical estimates of data quality may be percent accuracy (+ a percentage of the reported value), numerical ranges (low to high), or any other means considered appropriate by the laboratory.

   c. Sample results less than the laboratory's MDL shall be reported as "Not Detected," or ND.

   d. Dischargers are to instruct laboratories to establish calibration standards so that the ML value (or its equivalent if there is differential treatment of samples relative to calibration standards) is the lowest calibration standard. At no time is the Discharger to use analytical data derived from extrapolation beyond the lowest point of the calibration curve.

4. **Compliance Determination.** Compliance with effluent limitations for priority pollutants shall be determined using sample reporting protocols defined above and in Attachment A of this Order. For purposes of reporting and administrative enforcement by the Central Valley Water Board and the State Water Board, the Discharger shall be deemed out of compliance with effluent limitations if the concentration of the priority pollutant in the monitoring sample is greater than the effluent limitation and greater than or equal to the reporting level (RL).

5. **Multiple Sample Data.** When determining compliance with an AMEL, AWEL, or MDEL for priority pollutants and more than one sample result is available, the Discharger shall compute the arithmetic mean unless the data set contains one or more reported determinations of "Detected, but Not Quantified" (DNQ) or "Not Detected" (ND). In those cases, the Discharger shall compute the median in place of the arithmetic mean in accordance with the following procedure.

a. The data set shall be ranked from low to high, ranking the reported ND determinations lowest, DNQ determinations next, followed by quantified values (if any). The order of the individual ND or DNQ determinations is unimportant.

b. The median value of the data set shall be determined. If the data set has an odd number of data points, then the median is the middle value. If the data set has an even number of data points, then the median is the average of the two values around the middle unless one or both of the points are ND or DNQ, in which case the median value shall be the lower of the two data points where DNQ is lower than a value and ND is lower than DNQ.

6. Reporting Requirements. In reporting the monitoring data, the Discharger shall arrange the data in a tabular form so that the date, the constituents, and the concentrations are readily discernible.

a. The data shall be summarized to clearly illustrate whether the facility is operating in compliance with interim and/or final effluent limitations or with other waste discharge requirements (e.g., discharge specifications, receiving water limitations, special provisions, etc.).

b. Reports must clearly show when discharging to Discharge Point Nos. 001 and 002 or other permitted discharge locations. Reports must show the date and time that the discharge started and stopped at each location.

c. The highest daily maximum for the month and monthly and weekly averages shall be determined and recorded as needed to demonstrate compliance.

7. Calculation Requirements. The following shall be calculated and reported in the SMRs:

a. Dissolved Oxygen Receiving Water Limitations. The Discharger shall calculate and report monthly in the self-monitoring report: i) the dissolved oxygen concentration, ii) the percent of saturation in the main water mass, and iii) the 95th percentile dissolved oxygen concentration.

b. Turbidity Receiving Water Limitations. The Discharger shall calculate and report the turbidity increase in the receiving water applicable to the natural turbidity condition specified in Section V.A.16.a-e. of the Limitations and Discharge Requirements.

8. The Discharger shall submit SMRs in accordance with the following requirements:

a. When electronic submittal of data is required and CIWQS does not provide for entry into a tabular format within the system, the Discharger shall electronically submit the data in a tabular format as an attachment. The Discharger is not required to duplicate the submittal of data that is entered in a tabular format within CIWQS.

b. The Discharger shall attach a cover letter to the SMR. The information contained in the cover letter shall clearly identify violations of the WDRs; discuss corrective

actions taken or planned; and the proposed time schedule for corrective actions. Identified violations must include a description of the requirement that was violated and a description of the violation.

c. SMRs must be submitted to the Central Valley Water Board, signed and certified as required by the Standard Provisions (Attachment D), to the address listed below:

Regional Water Quality Control Board
Central Valley Region
NPDES Compliance and Enforcement Unit
11020 Sun Center Dr., Suite #200
Rancho Cordova, CA 95670-6114

C. Discharge Monitoring Reports (DMRs) – Not Applicable

D. Other Reports

1. The Discharger shall report the results of any special studies, acute and chronic toxicity testing, and TRE/TIE required by Special Provisions VI.C of this Order. The Discharger shall submit reports with the first monthly SMR scheduled to be submitted on or immediately following the report due date.

2. Within 60 days of permit adoption, the Discharger shall submit a report outlining reporting levels (RLs), method detection limits, and analytical methods for approval. At a minimum, the Discharger shall comply with the monitoring requirements for CTR constituents as outlined in section 2.3 and 2.4 of the SIP. In accordance with Section 2.4.2 of the SIP, when there is more than one ML value for a given substance, the Central Valley Water Board shall include as RLs, in the permit, all ML values, and their associated analytical methods, listed in Appendix 4 that are below the calculated effluent limitation. The Discharger may select any one of those cited analytical methods for compliance determination. If no ML value is below the effluent limitation, then the Central Valley Water Board shall select as the RL, the lowest ML value, and its associated analytical method, listed in Appendix 4 for inclusion in the permit. Table H-1 (Attachment H) provides required maximum reporting levels in accordance with the SIP.

3. Effluent and Receiving Water Characterization Study. An effluent and receiving water monitoring study is required to ensure adequate information is available for the next permit renewal. During the third or fourth year following the date of permit adoption, the Discharger shall monitor the effluent at Monitoring Location EFF-001 and of the receiving water at Monitoring Location RSW-001 for all priority pollutants and other constituents of concern as described in Attachment H. The Discharger shall conduct two sampling events, once during wet weather (i.e., from December-February) and once during dry weather (i.e., from July-September).

Task	Compliance Date
i. Submit Work Plan and Time Schedule	No later than 30 months from adoption of this Order
ii. Conduct monitoring	Twice during the third or fourth year following the date of permit adoption at Monitoring Locations EFF-001 and RSW-001
iii. Submit Final Report	6 months following completion of final monitoring event

4. **Annual Operations Report.** By 1 February of each year, the Discharger shall submit a written report to the Executive Officer containing the following:

   a. The names, certificate grades, and general responsibilities of all persons employed at the Facility.

   b. The names and telephone numbers of persons to contact regarding the plant for emergency and routine situations.

   c. A statement certifying when the flow meter(s) and other monitoring instruments and devices were last calibrated, including identification of who performed the calibration.

   d. A statement certifying whether the current operation and maintenance manual, and contingency plan, reflect the groundwater extraction and treatment plant as currently constructed and operated, and the dates when these documents were last revised and last reviewed for adequacy.

   e. The Discharger may also be requested to submit an annual report to the Central Valley Water Board with both tabular and graphical summaries of the monitoring data obtained during the previous year. Any such request shall be made in writing. The report shall discuss the compliance record. If violations have occurred, the report shall also discuss the corrective actions taken and planned to bring the discharge into full compliance with the waste discharge requirements.

ATTACHMENT F – FACT SHEET

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ATTACHMENT F – FACT SHEET

As described in the Findings in section II of this Order, this Fact Sheet includes the legal requirements and technical rationale that serve as the basis for the requirements of this Order.

This Order has been prepared under a standardized format to accommodate a broad range of discharge requirements for dischargers in California. Only those sections or subsections of this Order that are specifically identified as "not applicable" have been determined not to apply to this Discharger. Sections or subsections of this Order not specifically identified as "not applicable" are fully applicable to this Discharger.

I. PERMIT INFORMATION

The following table summarizes administrative information related to the Facility.

Table F-1. Facility Information

WDID	5A340311002
Discharger	County of Sacramento, Department of Waste Management and Recycling
Name of Facility	Kiefer Landfill Groundwater Extraction and Treatment Plant
Facility Address	12701 Kiefer Boulevard
	Sloughhouse, California 95683
	Sacramento County
Facility Contact, Title and Phone	Eric Vanderbilt, P.E., Senior Civil Engineer, (916) 875-6568
Authorized Person to Sign and Submit Reports	Eric Vanderbilt, P.E., Senior Civil Engineer, (916) 875-6568
Mailing Address	9850 Goethe Road Sacramento, CA 95827
Billing Address	Same as Mailing Address
Type of Facility	Groundwater Extraction and Treatment Facility
Major or Minor Facility	Minor
Threat to Water Quality	3
Complexity	C
Pretreatment Program	Not Applicable
Reclamation Requirements	Not Applicable
Facility Permitted Flow	2.17 million gallons per day (MGD)
Facility Design Flow	2.17 MGD
Watershed	Lower Cosumnes-Lower Mokelumne
Receiving Water	Deer Creek
Receiving Water Type	Inland Surface Water

A. The County of Sacramento, Department of Waste Management and Recycling (hereinafter Discharger) is the owner and operator of the Kiefer Landfill Groundwater Extraction and Treatment Plant (hereinafter Facility), a groundwater extraction and treatment plant within a municipal solid waste landfill.

For the purposes of this Order, references to the "discharger" or "permittee" in applicable federal and state laws, regulations, plans, or policy are held to be equivalent to references to the Discharger herein..

B. The Facility discharges treated groundwater to Deer Creek, a water of the United States, and was regulated by Order R5-2007-0014, which was adopted on 15 March 2007 and expired on 1 March 2012. The terms and conditions of Order R5-2007-0014 were automatically continued and remained in effect until new Waste Discharge Requirements (WDRs) and National Pollutant Discharge Elimination System (NPDES) permit were adopted pursuant to this Order. A site visit was conducted on 8 February 2012 to observe operations and collect additional data to develop permit limitations and conditions.

C. The Discharger filed a report of waste discharge and submitted an application for renewal of its WDRs and NPDES permit on 2 September 2011.

II. FACILITY DESCRIPTION

The Discharger owns and operates the Kiefer Landfill, a Class III solid waste disposal facility, which includes an on-site groundwater extraction and treatment system. The landfill is at the intersection of Grant Line Road and Kiefer Boulevard, in the eastern portion of Sacramento County, about 15 miles east of the City of Sacramento, 1 mile north of Sloughhouse, and 6 miles northwest of the City of Rancho Murieta. A 1987 Solid Wastewater Quality Assessment Test indicated that disposal operations at the landfill have resulted in contamination of groundwater with volatile organic compounds (VOCs). The Discharger was directed to remediate the groundwater under an approved Correction Action Plan (CAP) required under Cleanup and Abatement Order (CAO) No. 01-725. The CAP calls for the extraction and treatment of the contaminated groundwater. The CAO identified the following VOCs of concern detected in the groundwater: vinyl chloride, tetrachloroethylene, trichloroethane, trichloroethylene, trans-1,2-dichloroethylene, 1,1-dichloroethane, dichlorodifluoromethane, trichlorofluoromethane, methylene chloride, and chloroform. Additionally, frequent influent data identified cis-1,2-dichloroethylene as consistently present in the influent groundwater. The design flow capacity of the Facility is 2.17 MGD.

A. Description of Wastewater and Biosolids Treatment or Controls

The groundwater extraction and treatment system was established as a means of controlling contaminant migration and removing contaminants from groundwater. The treatment system at the Facility consists of a groundwater extraction well network and an air stripping system.

1. **Extraction Well Network.** The groundwater treatment system is fed by a groundwater extraction network consisting of 14 extraction wells. When fully operational, the daily average flow for the system is 1.5 MGD, with a long-term average flow of around 1.0 MGD.

2. **Air Stripping System.** Groundwater extracted from the extraction well network is delivered to a central air stripping facility that includes two air stripping towers for the

removal of VOCs from groundwater. The Sacramento Metropolitan Air Quality Management District has authorized atmospheric discharge of vapor phase organics based on daily VOC mass removal and the Sacramento Metropolitan Air Quality Management District's policy for emission.

B. Discharge Points and Receiving Waters

1. The Facility is located in Section 35, T8N, R7E, MDB&M, as shown in Attachment B, a part of this Order.

2. Treated groundwater is discharged at Discharge Point No. 001 to Deer Creek, a water of the United States and a tributary to the Cosumnes River at a point latitude 38° 30' 11" N and longitude 121° 10' 25" W. During groundwater treatment system maintenance operations, the Discharger may discharge groundwater to the on-site sedimentation basin at a point latitude 38° 30' 25" and longitude 121° 10' 51".

C. Summary of Existing Requirements and Self-Monitoring Report (SMR) Data

Effluent limitations contained in Order R5-2007-0014 for discharges from Discharge Point No. 001 (Monitoring Location EFF-001) and representative monitoring data from the term of Order R5-2007-0014 are as follows:

Table F-2. Historic Effluent Limitations and Monitoring Data

Parameter	Units	Effluent Limitation			Monitoring Data (From November 2008 To October 2011)		
		Average Monthly	Average Weekly	Maximum Daily	Highest Average Monthly Discharge	Highest Average Weekly Discharge	Highest Daily Discharge
pH	standard units	--	--	6.5 – 8.5	--	--	7.0 – 8.5
Aluminum, Total Recoverable	µg/L	71	--	143	45	--	103
Manganese, Total Recoverable	µg/L	50	--	--	28.7[6]	--	--
Nickel, Total Recoverable	µg/L	18	--	59	1.3	--	1.3
Volatile Organic Compounds	µg/L	--	--	0.5[1]	--	--	0.50[2]
Organochlorine Pesticides	µg/L	--	--	ND[1]	--	--	ND[3]
Total Dissolved Solids	mg/L	367	--	--	349	--	--
Chlorine, Total Residual	mg/L	0.01[4]	--	0.02[5]	ND	--	ND

Parameter	Units	Effluent Limitation			Monitoring Data (From November 2008 To October 2011)		
		Average Monthly	Average Weekly	Maximum Daily	Highest Average Monthly Discharge	Highest Average Weekly Discharge	Highest Daily Discharge

ND = Not Detected

[1] Applied as an instantaneous maximum.

[2] Value represents the concentration of highest reported VOC, which was naphthalene on 27 April 2010 and 1,2,3-trichlorobenzene on 23 March 2009. 1,2,3-trichlorobenzene was detected but not quantified at a concentration of 0.55 µg/L on 17 May 2010; however, the detection is suspected to be the result of laboratory error since the pollutant was detected in the associated laboratory blank.

[3] No individual organochlorine pesticides were detected in the effluent.

[4] Applied as a 4-day average effluent limitation.

[5] Applied as a 1-hour maximum effluent limitation.

[6] Effluent manganese data since implementation of source control and maintenance procedures (February 2011 to October 2011).

D. Compliance Summary

There have been no Mandatory Minimum Penalties issued pursuant to CWC Section 13385 for violations of previous Order R5-2007-0014.

E. Planned Changes – Not Applicable

III. APPLICABLE PLANS, POLICIES, AND REGULATIONS

The requirements contained in this Order are based on the applicable plans, policies, and regulations identified in the Findings in section II of this Order. The applicable plans, policies, and regulations relevant to the discharge include the following:

A. Legal Authorities

This Order is issued pursuant to regulations in the Clean Water Act (CWA) and the California Water Code (Water Code) as specified in the Finding contained at section II.C of this Order.

B. California Environmental Quality Act (CEQA)

This Order exempt from CEQA as specified in the Finding contained at section II.E of this Order.

C. State and Federal Regulations, Policies, and Plans

1. **Water Quality Control Plans.** This Order implements the following water quality control plans as specified in the Finding contained at section II.H of this Order.

   a. *Water Quality Control Plan, Fourth Edition (Revised October 2011), for the Sacramento and San Joaquin River Basins* (Basin Plan)

2. **National Toxics Rule (NTR) and California Toxics Rule (CTR).** This Order implements the NTR and CTR as specified in the Finding contained at section II.I of this Order.

3. **State Implementation Policy (SIP).** This Order implements the SIP as specified in the Finding contained at section II.J of this Order.

4. **Alaska Rule.** This Order is consistent with the Alaska Rule as specified in the Finding contained at section II.L of this Order.

5. **Antidegradation Policy.** As specified in the Finding contained at section II.N of this Order and as discussed in detail in the Fact Sheet (Attachment F, section IV.D.4.), the discharge is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Resources Control Board (State Water Board) Resolution 68-16.

6. **Anti-Backsliding Requirements.** This Order is consistent with anti-backsliding policies as specified in the Finding contained at section II.O of this Order. Compliance with the anti-backsliding requirements is discussed in the Fact Sheet (Attachment F, Section IV.D.3).

7. **Storm Water Requirements**

   USEPA promulgated federal regulations for storm water on 16 November 1990 in 40 CFR Parts 122, 123, and 124. The NPDES Industrial Storm Water Program does not regulate stormwater discharges from groundwater treatment plants. However, the groundwater treatment plant is within the confines of a landfill. The NPDES Industrial Storm Water Program regulates storm water discharges from landfill facilities. Landfill facilities are applicable industries under the storm water program and are obligated to comply with the federal regulations. The Discharger has submitted an NOI to be covered under the General Industrial Storm Water Permit.

8. **Endangered Species Act.** This Order is consistent with the Endangered Species Act as specified in the Finding contained at section II.P of this Order.

D. Impaired Water Bodies on CWA 303(d) List

1. Under section 303(d) of the 1972 CWA, states, territories and authorized tribes are required to develop lists of water quality limited segments. The waters on these lists do not meet water quality standards, even after point sources of pollution have installed the minimum required levels of pollution control technology. On 12 November 2010 USEPA gave final approval to California's 2010 section 303(d) List of Water Quality Limited Segments. The Basin Plan references this list of Water

Quality Limited Segments (WQLSs), which are defined as "…*those sections of lakes, streams, rivers or other fresh water bodies where water quality does not meet (or is not expected to meet) water quality standards even after the application of appropriate limitations for point sources* (40 CFR Part 130, et seq.)." The Basin Plan also states, "*Additional treatment beyond minimum federal standards will be imposed on dischargers to [WQLSs]. Dischargers will be assigned or allocated a maximum allowable load of critical pollutants so that water quality objectives can be met in the segment*." Deer Creek (Sacramento County) is listed on the 303(d) list as impaired for iron. Additionally, the Cosumnes River below Michigan Bar, to which Deer Creek is tributary, is listed as impaired for E. coli, invasive species, and sediment toxicity.

2. **Total Maximum Daily Loads (TMDLs).** USEPA requires the Central Valley Water Board to develop TMDLs for each 303(d) listed pollutant and water body combination. Currently, TMDLs have not been developed for Deer Creek or the Cosumnes River.

3. The 303(d) listings and TMDLs have been considered in the development of the Order. A pollutant-by-pollutant evaluation of each pollutant of concern is described in section IV.C.3. of this Fact Sheet.

E. Other Plans, Policies and Regulations

1. **Title 27, California Code of regulations (CCR), section 20005 et seq. (hereinafter Title 27).** Some discharges of wastewater to land are exempt from the requirements of Title 27, CCR, based on section 20090 et seq. Title 27 CCR section 20090(b) contains an exemption for discharges of wastewater to land where the discharge is covered by WDRs, the discharge is in compliance with the Basin Plan, and the discharge does not need to be managed as a hazardous waste.

   The Facility periodically discharges to an unlined storm water sedimentation basin during maintenance of the treatment system or in case of emergency. Groundwater data is not available to determine if the discharges to the sedimentation basin comply with the Basin Plan. Based on monitoring for discharges to the sedimentation basin for pH, salinity (electrical conductivity and total dissolved solids), VOCs, and metals, manganese is the only constituent that exceeds applicable groundwater quality objectives. Based on monitoring data for sedimentation basin discharges between 2008 and 2011, the annual average discharge volume was 9.1 million gallons. Facility representatives indicated during an 8 February 2012 site visit that they have increased the volume discharged to the sedimentation basin as the result of additional maintenance events. Although the discharges to the sedimentation basin have increased, the amount of discharge may be small compared to the volume of the storm water that flows into the basin, which has a capacity of 300 acre-feet (98 million gallons). However, the typical amount of storm water stored in the sedimentation basin is unknown. During the site visit, the operator indicated that the basin has not been filled to capacity since the winter flood event of 1997.

Based on the discussion above, there is insufficient information to determine if the discharge is in compliance with the requirements for a Title 27 exemption. This Order includes a compliance schedule for meeting the Title 27 requirements. As a first step, the time schedule requires the Discharger to perform a groundwater study to evaluate if the Facility meets the conditions for an exemption from the requirements of Title 27, as discussed in section VII.B.7 of this Fact Sheet.

IV. RATIONALE FOR EFFLUENT LIMITATIONS AND DISCHARGE SPECIFICATIONS

Effluent limitations and toxic and pretreatment effluent standards established pursuant to sections 301 (Effluent Limitations), 302 (Water Quality Related Effluent Limitations), 304 (Information and Guidelines), and 307 (Toxic and Pretreatment Effluent Standards) of the CWA and amendments thereto are applicable to the discharge.

The CWA mandates the implementation of effluent limitations that are as stringent as necessary to meet water quality standards established pursuant to state or federal law [33 U.S.C., §1311(b)(1)(C); 40 CFR 122.44(d)(1)]. NPDES permits must incorporate discharge limits necessary to ensure that water quality standards are met. This requirement applies to narrative criteria as well as to criteria specifying maximum amounts of particular pollutants. Pursuant to federal regulations, 40 CFR 122.44(d)(1)(i), NPDES permits must contain limits that control all pollutants that "*are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any state water quality standard, including state narrative criteria for water quality*." Federal regulations, 40 CFR 122.44(d)(1)(vi), further provide that "[w]*here a state has not established a water quality criterion for a specific chemical pollutant that is present in an effluent at a concentration that causes, has the reasonable potential to cause, or contributes to an excursion above a narrative criterion within an applicable State water quality standard, the permitting authority must establish effluent limits*."

The CWA requires point source dischargers to control the amount of conventional, non-conventional, and toxic pollutants that are discharged into the waters of the United States. The control of pollutants discharged is established through effluent limitations and other requirements in NPDES permits. There are two principal bases for effluent limitations in the Code of Federal Regulations: 40 CFR 122.44(a) requires that permits include applicable technology-based limitations and standards; and 40 CFR 122.44(d) requires that permits include WQBELs to attain and maintain applicable numeric and narrative water quality criteria to protect the beneficial uses of the receiving water where numeric water quality objectives have not been established. The Basin Plan at page IV-17.00 contains an implementation policy, "*Policy for Application of Water Quality Objectives*" that specifies that the Central Valley Water Board "*will, on a case-by-case basis, adopt numerical limitations in orders which will implement the narrative objectives*." This Policy complies with 40 CFR 122.44(d)(1). With respect to narrative objectives, the Central Valley Water Board must establish effluent limitations using one or more of three specified sources, including: (1) USEPA's published water quality criteria, (2) a proposed state criterion (i.e., water quality objective) or an explicit state policy interpreting its narrative water quality criteria (i.e., the Central Valley Water Board's "*Policy for Application of Water Quality Objectives*")(40 CFR 122.44(d)(1)(vi)(A), (B) or (C)), or (3) an indicator parameter.

The Basin Plan includes numeric site-specific water quality objectives and narrative objectives for toxicity, chemical constituents, discoloration, radionuclides, and tastes and odors. The narrative toxicity objective states: "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life*." (Basin Plan at III-8.00) The Basin Plan states that material and relevant information, including numeric criteria, and recommendations from other agencies and scientific literature will be utilized in evaluating compliance with the narrative toxicity objective. The narrative chemical constituents objective states that waters shall not contain chemical constituents in concentrations that adversely affect beneficial uses. At minimum, "…*water designated for use as domestic or municipal supply (MUN) shall not contain concentrations of chemical constituents in excess of the maximum contaminant levels (MCLs)" in Title 22 of CCR.* The Basin Plan further states that, to protect all beneficial uses, the Central Valley Water Board may apply limits more stringent than MCLs. The narrative tastes and odors objective states: *"Water shall not contain taste- or odor-producing substances in concentrations that impart undesirable tastes or odors to domestic or municipal water supplies or to fish flesh or other edible products of aquatic origin, or that cause nuisance, or otherwise adversely affect beneficial uses*."

A. Discharge Prohibitions

1. **Prohibition III.A (No discharge of treated groundwater at a location or in a manner different from that described in the Findings).** The Discharger submitted a ROWD for the discharges described in this Order; therefore, discharges not described in this Order are prohibited. This Prohibition is in accordance with WDRs and is based on CWA sections 301 and 402 and CWC section 13263.

2. **Prohibition III.B (No bypasses or overflow of untreated groundwater, except under the conditions at CFR Part 122.41(m)(4)).** As stated in section I.G of Attachment D, Standard Provisions, this Order prohibits bypass from any portion of the treatment facility. Federal regulations, 40 CFR 122.41(m), define "bypass" as the intentional diversion of waste streams from any portion of a treatment facility. This section of the federal regulations, 40 CFR 122.41(m)(4), prohibits bypass unless it is unavoidable to prevent loss of life, personal injury, or severe property damage. In considering the Regional Water Board's prohibition of bypasses, the State Water Board adopted a precedential decision, Order No. WQO 2002-0015, which cites the federal regulations, 40 CFR 122.41(m), as allowing bypass only for essential maintenance to assure efficient operation.

3. **Prohibition III.C (No controllable condition shall create a nuisance).** This prohibition is based on Water Code section 13050 that requires water quality objectives established for the prevention of nuisance within a specific area. The Basin Plan prohibits conditions that create a nuisance.

B. Technology-Based Effluent Limitations.

1. **Scope and Authority**

   Section 301(b) of the CWA and implementing USEPA permit regulations at 40 CFR 122.44 require that permits include conditions meeting applicable

technology-based requirements at a minimum, and any more stringent effluent limitations necessary to meet applicable water quality standards. The discharge authorized by this Order must meet minimum federal technology-based requirements based on Best Professional Judgment (BPJ) in accordance with 40 CFR 125.3.

The CWA requires that technology-based effluent limitations be established based on several levels of controls:

a. Best practicable treatment control technology (BPT) represents the average of the best performance by plants within an industrial category or subcategory. BPT standards apply to toxic, conventional, and non-conventional pollutants.

b. Best available technology economically achievable (BAT) represents the best existing performance of treatment technologies that are economically achievable within an industrial point source category. BAT standards apply to toxic and non-conventional pollutants.

c. Best conventional pollutant control technology (BCT) represents the control from existing industrial point sources of conventional pollutants including BOD, TSS, fecal coliform, pH, and oil and grease. The BCT standard is established after considering the “cost reasonableness” of the relationship between the cost of attaining a reduction in effluent discharge and the benefits that would result, and also the cost effectiveness of additional industrial treatment beyond BPT.

d. New source performance standards (NSPS) represent the best available demonstrated control technology standards. The intent of NSPS guidelines is to set limitations that represent state-of-the-art treatment technology for new sources.

The CWA requires USEPA to develop effluent limitations, guidelines and standards (ELGs) representing application of BPT, BAT, BCT, and NSPS. CWA section 402(a)(1) and 40 CFR 125.3 authorize the use of best professional judgment (BPJ) to derive technology-based effluent limitations on a case-by-case basis where ELGs are not available for certain industrial categories and/or pollutants of concern. Where BPJ is used, the permit writer must consider specific factors outlined in 40 CFR 125.3.

2. Applicable Technology-Based Effluent Limitations

a. Volatile Organic Compounds (VOCs). Air stripping treatment systems are commonly used to remove VOCs from extracted groundwater at cleanup sites. The Facility utilizes air stripping and is capable of dependably removing the groundwater contaminants to concentrations that are non-detectable by current analytical technology. Order R5-2007-0014 included maximum daily technology-based effluent limitations for all VOC constituents.

State Water Board Resolution No. 68-16 requires implementation of best practicable treatment and control (BPTC) to ensure that the highest water quality is maintained consistent with the maximum benefit to the people of the State. BPTC for groundwater cleanup of VOCs provides that the pollutants should be discharged at concentrations no higher than quantifiable levels for each pollutant. For the purposes of this Order, BPTC for VOCs requires meeting effluent limitations based on the Minimum Levels (MLs) defined in Appendix 4, Table 2a of the SIP. Several dischargers, including the Discharger, in the Central Valley Region have implemented BPTC groundwater treatment systems and have been able to consistently treat VOCs in the treated groundwater to concentrations below the MLs in the SIP.

According to the SIP, if no ML value is below the effluent limitation, the applicable ML value shall be the lowest ML value listed in Appendix 4 of the SIP. VOC concentrations below the MLs are generally considered unquantifiable. Therefore, application of technology-based effluent limitations for VOCs at groundwater cleanup sites requires effluent to meet MLs.

With respect to the specific discharges permitted herein, the following have been considered as required in 40 CFR 125.3 for establishing effluent limitations based on BPJ:

Appropriate Technology for Category or Class of Discharges. Air stripping treatment systems are commonly used to remove VOCs from extracted groundwater at cleanup sites. Properly operated and maintained systems perform reliably and ensure essentially complete removal of VOCs. The Discharger employs an air stripper system.

Unique Factors Relating to the Discharger. The Discharger has not identified any unique factors that would justify discharges equaling or exceeding quantifiable concentrations of VOCs.

Age of Equipment. The Discharger has not identified any concerns related to the ability to treat the contaminated groundwater due to the age of the equipment. The Facility was constructed in April 1995. In 1999, the Facility was upgraded with four additional extraction wells and a new higher capacity blower.

Non-water Quality Environmental Impacts. The system currently in place reliably removes VOCs to concentrations of less than 0.5 µg/L and should not create additional non-water quality impacts (e.g., air emissions), or undue financial costs for the Discharger.

Influent and Effluent Data. The monitoring data provided by the Discharger indicates that the air stripper system has the ability to consistently remove VOCs in the groundwater to less than 0.5 µg/L.

Air stripping systems are appropriate technologies for VOC removal from extracted groundwater. The above supports the conclusion that the Discharger can meet the maximum daily effluent limitation (MDEL) of 0.5 µg/L.

Order R5-2007-0014 contained a technology-based MDEL for all VOCs of 0.5 µg/L. VOCs of concern identified in the Discharger's CAP include vinyl chloride, tetrachloroethylene, trichloroethane, trichloroethylene, trans-1,2-dichloroethylene, 1,1-dichloroethane, dichlorodifluoromethane, trichlorofluoromethane, methylene chloride, chloroform. Additionally, VOC monitoring of the influent groundwater indicates that cis-1,2-dichloroethylene is consistently present in the influent to the treatment system and is therefore also a constituent of concern in the groundwater.

The CAO identified trichloroethane as a VOC detected in on-site monitoring wells, however, the specific chemical form of trichloroethane (i.e., 1,1,1-trichloroethane or 1,1,2-trichloroethane) was not identified in the CAO. Monitoring demonstrates 1,1,1-trichloroethane or 1,1,2-trichloroethane has not been present in the influent to the Facility since the CAO was adopted in 1991.

This Order retains the MDEL for vinyl chloride, tetrachloroethylene, trichloroethylene, trans-1,2-dichloroethylene, 1,1-dichloroethane, dichlorodifluoromethane, trichlorofluoromethane, methylene chloride, chloroform, and cis-1,2-dichloroethylene but discontinues the technology-based effluent limitations for those VOCs that were not detected in the influent groundwater or treated effluent. Removal of effluent limitations for all other VOCs is in accordance with federal anti-backsliding regulations (see section IV.D.3 of the Fact Sheet). This Order will continue to require monitoring for all VOCs listed in Attachment I in order to characterize the effluent in future permit renewals.

b. Flow. A technology-based effluent limitation for flow is established in this Order to monitor the performance of the groundwater treatment system from the standpoint of volumes being treated. Order R5-2007-0014 established an average monthly discharge flow limitation of 2.17 MGD, based on the design flow of the Facility. This Order retains this monthly average flow limitation.

Summary of Technology-based Effluent Limitations
Discharge Point No. 001

Table F-3. Summary of Technology-based Effluent Limitations

Parameter	Units	Effluent Limitations			
		Average Monthly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
Flow	MGD	2.17	--	--	--
Volatile Organic Compounds[1]	µg/L	--	0.5	--	--

[1] This effluent limitations only apply to VOCs identified as constituents of concern in the influent groundwater, including: vinyl chloride, tetrachloroethylene, trichloroethylene, trans-1,2-dichloroethylene, 1,1-dichloroethane, dichlorodifluoromethane, trichlorofluoromethane, methylene chloride, chloroform, and cis-1,2-dichloroethylene.

C. Water Quality-Based Effluent Limitations (WQBELs)

1. Scope and Authority

Section 301(b) of the CWA and 40 CFR 122.44(d) require that permits include limitations more stringent than applicable federal technology-based requirements where necessary to achieve applicable water quality standards.

40 CFR 122.44(d)(1)(i) mandates that permits include effluent limitations for all pollutants that are or may be discharged at levels that have the reasonable potential to cause or contribute to an exceedance of a water quality standard, including numeric and narrative objectives within a standard. Where reasonable potential has been established for a pollutant, but there is no numeric criterion or objective for the pollutant, WQBELs must be established using: (1) USEPA criteria guidance under CWA section 304(a), supplemented where necessary by other relevant information; (2) an indicator parameter for the pollutant of concern; or (3) a calculated numeric water quality criterion, such as a proposed state criterion or policy interpreting the state's narrative criterion, supplemented with other relevant information, as provided in 40 CFR 122.44(d)(1)(vi).

The process for determining reasonable potential and calculating WQBELs when necessary is intended to protect the designated uses of the receiving water as specified in the Basin Plan, and achieve applicable water quality objectives and criteria that are contained in other state plans and policies, or any applicable water quality criteria contained in the CTR and NTR.

2. Applicable Beneficial Uses and Water Quality Criteria and Objectives

The Basin Plan designates beneficial uses, establishes water quality objectives, and contains implementation programs and policies to achieve those objectives for all waters addressed through the plan. In addition, the Basin Plan implements State Water Board Resolution No. 88-63, which established state policy that all waters, with certain exceptions, should be considered suitable or potentially suitable for municipal or domestic supply.

The Basin Plan on page II-1.00 states: "*Protection and enhancement of existing and potential beneficial uses are primary goals of water quality planning…*" and with respect to disposal of wastewaters states that "...*disposal of wastewaters is [not] a prohibited use of waters of the State; it is merely a use which cannot be satisfied to the detriment of beneficial uses.*"

The federal CWA section 101(a)(2), states: "*it is the national goal that wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife, and for recreation in and on the water be achieved by July 1, 1983.*" Federal Regulations, developed to implement the requirements of the CWA, create a rebuttable presumption that all waters be designated as fishable and swimmable. Federal Regulations, 40 CFR sections 131.2 and 131.10, require that all waters of the State regulated to protect the beneficial uses of public water supply, protection and propagation of fish, shell fish and wildlife, recreation in and on the water, agricultural, industrial and other purposes including navigation. Section 131.3(e), 40 CFR, defines existing beneficial uses as those uses actually attained after 28 November 1975, whether or not they are included in the water quality standards. Federal Regulation, 40 CFR section 131.10 requires that uses be obtained by implementing effluent limitations, requires that all downstream uses be protected and states that in no case shall a state adopt waste transport or waste assimilation as a beneficial use for any waters of the United States.

a. **Receiving Water and Beneficial Uses.** The Basin Plan at II-2.00 states that the beneficial uses of any specifically identified water body generally apply to its tributary streams. The Basin Plan in Table II-1, Section II, does not specifically identify beneficial uses for Deer Creek, but does identify present and potential uses for the Cosumnes River, to which Deer Creek is tributary. Thus, beneficial uses applicable to Deer Creek are as follows:

Table F-4. Basin Plan Beneficial Uses

Discharge Point	Receiving Water Name	Beneficial Use(s)
001	Deer Creek	<u>Existing uses from Table II-1 of the Basin Plan:</u> Municipal and domestic supply (MUN); Agricultural supply, including irrigation and stock watering (AGR); Water contact recreation, including canoeing and rafting (REC-1); Non-contact water recreation (REC-2); Warm freshwater habitat (WARM); Cold freshwater habitat (COLD); Migration of aquatic organisms, warm and cold (MIGR); Spawning, reproduction, and/or early development, warm and cold (SPWN); and Wildlife habitat (WILD) <u>Suitable uses from State Water Board Resolution 88-63:</u> Municipal and domestic supply (MUN)
002	Groundwater	Municipal and domestic supply (MUN); Industrial service supply (IND); Industrial process supply (PRO); and Agricultural supply, including irrigation and stock watering (AGR)

In reviewing whether the existing and/or potential uses of the Cosumnes River apply to the Deer Creek, the Central Valley Water Board has considered the following facts:

i. Domestic Supply and Agricultural Supply

The Central Valley Water Board is required to apply the beneficial uses of municipal and domestic supply to the Deer Creek based on State Water Board Resolution No. 88-63 which was incorporated in the Basin Plan pursuant to Central Valley Water Board Resolution No. 89-056. In addition, the State Water Board has issued water rights to existing users along Deer Creek and the Cosumnes River downstream of the discharge for domestic and irrigation uses. Since Deer Creek is an ephemeral stream, Deer Creek likely provides groundwater recharge during periods of low flow. The groundwater is a source of drinking water. In addition to the existing water uses, growth in the area, downstream of the discharge is expected to continue, which presents a potential for increased domestic and agricultural uses of the water in Deer Creek.

Water Contact and Noncontact Recreation and Esthetic Enjoyment

The Central Valley Water Board finds that the discharge flows through residential areas, there is ready public access to Deer Creek, exclusion of the public is unrealistic and contact recreational activities currently exist along Deer Creek and downstream waters and these uses are likely to increase as the population in the area grows. Prior to flowing into the Cosumnes River, Deer Creek flows through areas of general public access, meadows, residential areas, and parks. The Cosumnes River also offers recreational opportunities.

Groundwater Recharge

In areas where groundwater elevations are below the stream bottom, water from the stream will percolate to groundwater. Since Deer Creek is at times dry, it is reasonable to assume that the stream is lost by evaporation, flow downstream and percolation to groundwater providing a source of municipal and irrigation water supply.

Freshwater Replenishment

When water is present in Deer Creek, there may be hydraulic continuity between Deer Creek and the Cosumnes River. During periods of hydraulic continuity, Deer Creek adds to the water quantity and may impact the quality of water flowing downstream in the Cosumnes River.

Preservation and Enhancement of Fish, Wildlife, and Other Aquatic Resources

Deer Creek flows to the Cosumnes River. The Basin Plan (Table II-1) designates the Cosumnes River as being both a cold and warm freshwater habitat. Therefore, pursuant to the Basin Plan (Table II-1, Footnote (2)), the

cold designation applies to Deer Creek. The cold freshwater habitat designation necessitates that the in-stream dissolved oxygen concentration be maintained at, or above, 7.0 mg/L.

Upon review of the flow conditions, habitat values, and beneficial uses of Deer Creek, and the facts describes above, the Central Valley Water Board finds that the beneficial uses identified in the Basin Plan for the Cosumnes River are applicable to Deer Creek.

b. **Effluent and Ambient Background Data.** The reasonable potential analysis (RPA), as described in section IV.C.3 of this Fact Sheet, was based on data from November 2008 through October 2011, which includes effluent and ambient background data submitted in self-monitoring reports (SMRs).

c. **Assimilative Capacity/Mixing Zone.** The Central Valley Water Board finds that based on the available information and the Discharger's application, that Deer Creek is an ephemeral stream. The ephemeral nature of Deer Creek means that credit for receiving water dilution is not available. Dry conditions occur primarily in the summer months, but dry conditions also may occur throughout the year, particularly in low rainfall years.

d. **Conversion Factors.** The CTR contains aquatic life criteria for arsenic, cadmium, chromium III, chromium VI, copper, lead, nickel, silver, and zinc which are presented in dissolved concentrations. USEPA recommends conversion factors to translate dissolved concentrations to total concentrations. The default USEPA conversion factors contained in Appendix 3 of the SIP were used to convert the applicable dissolved criteria to total recoverable criteria. For non-CTR metals (e.g., aluminum, manganese, and iron) a default translator of 1.0 has been used.

e. **Hardness-Dependent CTR Metals Criteria.** The *California Toxics Rule* and the *National Toxics Rule* contain water quality criteria for seven metals that vary as a function of hardness. The lower the hardness the lower the water quality criteria. The metals with hardness-dependent criteria include cadmium, copper, chromium III, lead, nickel, silver, and zinc.

This Order has established the criteria for hardness-dependent metals based on the reasonable worst-case ambient hardness as required by the SIP[1], the CTR[2] and State Water Board Order No. WQO 2008-0008 (City of Davis). The SIP and the CTR require the use of "receiving water" or "actual ambient" hardness, respectively, to determine effluent limitations for these metals. (SIP, § 1.2; 40 CFR § 131.38(c)(4)) The CTR does not define whether the term "ambient," as applied in the regulations, necessarily requires the consideration of upstream as

[1] The SIP does not address how to determine the hardness for application to the equations for the protection of aquatic life when using hardness-dependent metals criteria. It simply states, in Section 1.2, that the criteria shall be properly adjusted for hardness using the hardness of the receiving water.

[2] The CTR requires that, for waters with a hardness of 400 mg/L (as $CaCO_3$), or less, the actual ambient hardness of the surface water must be used. It further requires that the hardness values used must be consistent with the design discharge conditions for design flows and mixing zones.

opposed to downstream hardness conditions. Therefore, where reliable, representative data are available, the hardness value for calculating criteria can be the downstream receiving water hardness, after mixing with the effluent (Order WQO 2008-0008, p. 11). The Central Valley Water Board thus has considerable discretion in determining ambient hardness (Id., p.10).

As discussed below, scientific literature provides a reliable method for calculating protective hardness-dependent CTR criteria, considering all discharge conditions. This methodology produces hardness-dependent CTR criteria based on the reasonable worst-case downstream ambient hardness that ensure these metals do not cause receiving water toxicity under any downstream receiving water condition. Under this methodology, the Central Valley Water Board considers all hardness conditions that could occur in the ambient downstream receiving water after the effluent has mixed with the water body[1]. This ensures that effluent limitations are fully protective of aquatic life in all areas of the receiving water affected by the discharge under all flow conditions, at the fully mixed location, and throughout the water body including at the point of discharge into the water body.

i. **Conducting the Reasonable Potential Analysis (RPA).** The SIP in Section 1.3 states, "*The RWQCB shall…determine whether a discharge may: (1) cause, (2) have a reasonable potential to cause, or (3) contribute to an excursion above any applicable priority pollutant criterion or objective*." Section 1.3 provides a step-by-step procedure for conducting the RPA. The procedure requires the comparison of the maximum effluent concentration (MEC) and maximum ambient background concentration to the applicable criterion that has been properly adjusted for hardness. Unless otherwise noted, for the hardness-dependent CTR metals criteria the following procedures were followed for properly adjusting the criterion for hardness when conducting the RPA.

(a) The SIP requires WQBELs if the MEC is equal to or exceeds the applicable criterion, adjusted for hardness. For comparing the MEC to the applicable criterion, the "fully mixed" reasonable worst-case downstream ambient hardness was used to adjust the criterion. In this evaluation the portion of the receiving water affected by the discharge is analyzed. For hardness-dependent criteria, the hardness of the effluent has an impact on the determination of the applicable criterion in areas of the receiving water affected by the discharge. Therefore, for comparing the MEC to the applicable criterion, the reasonable worst-case downstream ambient hardness was used to adjust the criterion. For this situation it is necessary to consider the hardness of the effluent in determining the applicable hardness to adjust the criterion. The procedures for determining the applicable criterion after proper adjustment using the reasonable worst-case downstream ambient hardness is outlined in subsection ii, below.

[1] All effluent discharges will change the ambient downstream metals concentration and hardness. It is not possible to change the metals concentration without without also changing the hardness.

(b) The SIP requires WQBELs if the receiving water is impaired upstream (outside the influence) of the discharge, i.e., if the maximum ambient background concentration of a pollutant exceeds the applicable criterion, adjusted for hardness[1]. For comparing the maximum ambient background concentration to the applicable criterion, the reasonable worst-case upstream ambient hardness was used to adjust the criteria. This is appropriate, because this area is outside the influence of the discharge. Since the discharge does not impact the upstream hardness, the effect of the effluent hardness was not included in this evaluation.

Calculating Water Quality-Based Effluent Limitations. The remaining discussion in this section relates to the development of WQBELs when it has been determined that the discharge has reasonable potential to cause or contribute to an exceedance of the CTR hardness-dependent metals criteria in the receiving water.

A 2006 Study[2] developed procedures for calculating the effluent concentration allowance (ECA)[3] for CTR hardness-dependent metals. The 2006 Study demonstrated that it is necessary to evaluate all discharge conditions (e.g., high and low flow conditions) and the hardness and metals concentrations of the effluent and receiving water when determining the appropriate ECA for these hardness-dependent metals. This method is superior to relying on downstream receiving water samples alone because it captures all possible mixed conditions in the receiving water. Both receiving water and effluent hardness vary based on flow and other factors, but the variability of receiving water and effluent hardness is sometimes independent. Using a calculated hardness value ensures that the Central Valley Water Board considers all possible mixed downstream values that may result from these two independent variables. Relying on receiving water sampling alone is less likely to capture all possible mixed downstream conditions.

The equation describing the total recoverable regulatory criterion, as established in the CTR[4], is as follows:

$$\text{CTR Criterion} = \text{WER} \times (e^{m[\ln(H)]+b}) \qquad \text{(Equation 1)}$$

Where:

H = hardness (as $CaCO_3$)[5]
WER = water-effect ratio
m, b = metal- and criterion-specific constants

In accordance with the CTR, the default value for the WER is 1. A WER study must be conducted to use a value other than 1. The constants “m” and

[1] The pollutant must also be detected in the effluent.
[2] Emerick, R.W.; Borroum, Y.; & Pedri, J.E., 2006. California and National Toxics Rule Implementation and Development of Protective Hardness Based Metal Effluent Limitations. WEFTEC, Chicago, Ill.
[3] The ECA is defined in Appendix 1 of the SIP (page Appendix 1-2). The ECA is used to calculate WQBELs in accordance with Section 1.4 of the SIP.
[4] 40 CFR § 131.38(b)(2).
[5] For this discussion, all hardness values are in mg/L as $CaCO_3$.

"b" are specific to both the metal under consideration, and the type of total recoverable criterion (i.e., acute or chronic). The metal-specific values for these constants are provided in the CTR at paragraph (b)(2), Table 1.

The equation for the ECA is defined in Section 1.4, Step 2, of the SIP and is as follows:

$ECA = C$ (when $C \leq B$)[1] (Equation 2)

Where:

C = the priority pollutant criterion/objective, adjusted for hardness (see Equation 1, above)
B = the ambient background concentration

The 2006 Study demonstrated that the relationship between hardness and the calculated criteria is the same for some metals, so the same procedure for calculating the ECA may be used for these metals. The same procedure can be used for chronic cadmium, chromium III, copper, nickel, and zinc. These metals are hereinafter referred to as "Concave Down Metals". "Concave Down" refers to the shape of the curve represented by the relationship between hardness and the CTR criteria in Equation 1. Another similar procedure can be used for determining the ECA for acute cadmium, lead, and acute silver, which are referred to hereafter as "Concave Up Metals".

ECA for Chronic Cadmium, Chromium III, Copper, Nickel, and Zinc – For Concave Down Metals (i.e., chronic cadmium, chromium III, copper, nickel, and zinc) the 2006 Study demonstrates that when the effluent is in compliance with the CTR criteria and the upstream receiving water is in compliance with the CTR criteria, any mixture of the effluent and receiving water will always be in compliance with the CTR criteria[2]. The 2006 Study proves that regardless of whether the effluent hardness is lower or greater than the upstream hardness, the reasonable worst-case flow condition is the effluent dominated condition (i.e., no receiving water flow)[3]. Consequently, for Concave Down Metals, the CTR criteria have been calculated using the downstream ambient hardness under this condition.

The effluent hardness ranged from 154 mg/L to 180 mg/L, based on 25 samples from November 2008 to October 2011. The upstream receiving water hardness varied from 48 mg/L to 200 mg/L, based on 38 samples from November 2008 to October 2011. Under the effluent dominated condition, the reasonable worst-case downstream ambient hardness is 154 mg/L. As

[1] The 2006 Study assumes the ambient background metals concentration is equal to the CTR criterion (i.e.,$C \leq B$)
[2] 2006 Study, p. 5700
[3] There are two typographical errors in the 2006 Study in the discussion of Concave Down Metals when the effluent hardness is less than the receiving water hardness. The effluent and receiving water hardness were transposed in the discussion, but the correct hardness values were used in the calculations. The typographical errors were confirmed by the author of the 2006 Study, by email dated 1 April 2011, from Dr. Robert Emerick to Mr. James Marshall, Central Valley Water Board.

demonstrated in the example shown in Table F-5, below, using this hardness to calculate the ECA for all Concave Down Metals will result in WQBELs that are protective under all flow conditions, from the effluent dominated condition to high flow condition. This example for copper assumes the following conservative conditions for the upstream receiving water:

- Upstream receiving water always at the lowest observed upstream receiving water hardness (i.e., 48 mg/L)
- Upstream receiving water copper concentration always at the CTR criteria (i.e., no assimilative capacity).

Using these reasonable worst-case receiving water conditions, a simple mass balance (as shown in Equation 3, below) accounts for all possible mixtures of effluent and receiving water under all flow conditions.

$$C_{MIX} = C_{RW} \times (1\text{-}EF) + C_{Eff} \times (EF) \qquad \text{(Equation 3)}$$

Where:

C_{MIX} = Mixed concentration (e.g. metals or hardness)
C_{RW} = Upstream receiving water concentration
C_{Eff} = Effluent concentration
EF = Effluent Fraction

In this example, for copper, for any receiving water flow condition (high flow to low flow), the fully-mixed downstream ambient copper concentration is in compliance with the CTR criteria.[1]

[1] This method considers the actual lowest observed upstream hardness and actual lowest observed effluent hardness to determine the reasonable worst-case ambient downstream hardness under all possible receiving water flow conditions. Table F-5 demonstrates that the receiving water is always in compliance with the CTR criteria at the fully-mixed location in the receiving water. It also demonstrates that the receiving water is in compliance with the CTR criteria for all mixtures from the point of discharge to the fully-mixed location. Therefore, a mixing zone is not used for compliance.

Table F-5. Copper ECA Evaluation

Lowest Observed Effluent Hardness					**154 mg/L (as $CaCO_3$)**
Lowest Observed Upstream Receiving Water Hardness					**48 mg/L (as $CaCO_3$)**
Highest Assumed Upstream Receiving Water Copper Concentration					**5.0 µg/L[1]**
Copper $ECA_{chronic}$[2]					**14 µg/L**
Effluent Fraction[6]		**Fully Mixed Downstream Ambient Concentration**			
		Hardness[3] (mg/L)	**CTR Criteria[4] (µg/L)**	**Copper[5] (µg/L)**	**Complies with CTR Criteria**
High Flow	1%	49	5.1	5.1	**Yes**
	5%	53	5.4	5.4	**Yes**
	15%	64	6.4	6.3	**Yes**
	25%	75	7.3	7.1	**Yes**
	50%	101	9.4	9.2	**Yes**
Low Flow	75%	128	12	12	**Yes**
	100%	154	14	14	**Yes**

1 Highest assumed upstream receiving water copper concentration calculated using Equation 1 for chronic criterion at a hardness of 48 mg/L.
2 ECA calculated using Equation 1 for chronic criterion at a hardness of 154 mg/L.
3 Fully mixed downstream ambient hardness is the mixture of the receiving water and effluent hardness at the applicable effluent fraction using Equation 3.
4 Fully mixed downstream ambient criteria are the chronic criteria calculated using Equation 1 at the mixed hardness.
5 Fully mixed downstream ambient copper concentration is the mixture of the receiving water and effluent copper concentrations at the applicable effluent fraction using Equation 3.
6 The effluent fraction ranges from 1% at the high receiving water flow condition, to 100% at the lowest receiving water flow condition (i.e., effluent dominated).

ECA for Acute Cadmium, Lead, and Acute Silver – For Concave Up Metals (i.e., acute cadmium, lead, and acute silver), the relationship between hardness and the metals criteria is different than for Concave Down Metals. The 2006 Study demonstrates that for Concave Up Metals, the effluent and upstream receiving water can be in compliance with the CTR criteria, but the resulting mixture may contain metals concentrations that exceed the CTR criteria and could cause toxicity. For these metals, the 2006 Study provides a mathematical approach to calculate the ECA that is protective of aquatic life, in all areas of the receiving water affected by the discharge, under all discharge and receiving water flow conditions (see Equation 4, below).

The ECA, as calculated using Equation 4, is based on the reasonable worst-case upstream receiving water hardness, the lowest observed effluent hardness, and assuming no receiving water assimilative capacity for metals (i.e., ambient background metals concentrations are at their respective CTR criterion). Equation 4 is not used in place of the CTR equation (Equation 1). Rather, Equation 4, which is derived using the CTR equation, is used as a direct approach for calculating the ECA. This replaces an iterative approach for calculating the ECA. The CTR equation has been used to evaluate the receiving water downstream of the discharge at all discharge and flow conditions to ensure the ECA is protective (e.g., see Table F-6).

$$ECA = \left(\frac{m(H_e - H_{rw})\left(e^{m\{\ln(H_{rw})\}+b}\right)}{H_{rw}} \right) + e^{m\{\ln(H_{rw})\}+b} \qquad \text{(Equation 4)}$$

Where:

m, b = criterion specific constants (from CTR)
H_e = lowest observed effluent hardness
H_{rw} = reasonable worst-case upstream receiving water hardness

An example similar to the Concave Down Metals is shown for lead, a Concave Up Metal, in Table F-6, below. As previously mentioned, the lowest effluent hardness is 154 mg/L, while the upstream receiving water hardness ranged from 48 mg/L to 200 mg/L. In this case, the reasonable worst-case upstream receiving water hardness to use in Equation 4 to calculate the ECA is 48 mg/L.

Using the procedures discussed above to calculate the ECA for all Concave Up Metals will result in WQBELs that are protective under all potential effluent/receiving water flow conditions (high flow to low flow) and under all known hardness conditions, as demonstrated in Table F-6, for lead.

Table F-6. Lead ECA Evaluation

Lowest Observed Effluent Hardness					**154 mg/L**
Reasonable Worst-case Upstream Receiving Water Hardness					**48 mg/L**
Reasonable Worst-case Upstream Receiving Water Lead Concentration					**1.3 µg/L[1]**
Lead $ECA_{chronic}$[2]					**4.8 µg/L**
Effluent Fraction[6]		**Fully Mixed Downstream Ambient Concentration**			
		Hardness[3] (mg/L) (as $CaCO_3$)	**CTR Criteria[4] (µg/L)**	**Lead[5] (µg/L)**	**Complies with CTR Criteria**
High Flow	1%	49	1.3	1.3	**Yes**
	5%	53	1.4	1.4	**Yes**
	15%	64	1.8	1.8	**Yes**
	25%	75	2.2	2.1	**Yes**
	50%	101	3.2	3.0	**Yes**
	75%	128	4.3	3.9	**Yes**
Low Flow	100%	154	5.5	4.8	**Yes**

1 Reasonable worst-case upstream receiving water lead concentration calculated using Equation 1 for chronic criterion at a hardness of 48 mg/L.
2 ECA calculated using Equation 4 for chronic criteria.
3 Fully mixed downstream ambient hardness is the mixture of the receiving water and effluent hardness at the applicable effluent fraction.
4 Fully mixed downstream ambient criteria are the chronic criteria calculated using Equation 1 at the mixed hardness.
5 Fully mixed downstream ambient lead concentration is the mixture of the receiving water and effluent lead concentrations at the applicable effluent fraction.
6 The effluent fraction ranges from 1% at the high receiving water flow condition, to 100% at the lowest receiving water flow condition (i.e., effluent dominated).

Based on the procedures discussed above, Table F-7 lists all the CTR hardness-dependent metals and the associated ECA used in this Order.

Table F-7. Summary of ECA Evaluations for CTR Hardness-dependent Metals

CTR Metals	ECA (µg/L, total recoverable)	
	acute	chronic
Copper	21	14
Chromium III	2,473	295
Cadmium	6.9	3.5
Lead	122	4.8
Nickel	676	75
Silver	5.5	--
Zinc	173	173

3. Determining the Need for WQBELs

a. The Central Valley Water Board conducted the RPA in accordance with Section 1.3 of the SIP, based on data from November 2008 through October 2011, which includes effluent and ambient background data submitted in self-monitoring reports (SMRs). Although the SIP applies directly to the control of CTR priority pollutants, the State Water Board has held that the Regional Water Boards may use the SIP as guidance for water quality-based toxics control.[1] The SIP states in the introduction "*The goal of this Policy is to establish a standardized approach for permitting discharges of toxic pollutants to non-ocean surface waters in a manner that promotes statewide consistency*." Therefore, in this Order the RPA procedures from the SIP were used to evaluate reasonable potential for both CTR and non-CTR constituents based on information submitted as part of the application, in studies, and as directed by monitoring and reporting programs.

b. Constituents with No Reasonable Potential. WQBELs are not included in this Order for constituents that do not demonstrate reasonable potential (i.e., constituents were not detected in the effluent or receiving water); however, monitoring for those pollutants is established in this Order as required by the SIP. If the results of effluent monitoring demonstrate reasonable potential, this Order may be reopened and modified by adding an appropriate effluent limitation.

Most constituents with no reasonable potential are not discussed in this Order. However, the following constituents were found to have no reasonable potential after assessment of the data:

i. Aluminum

(a) WQO. 40 CFR 131.38, *Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California* (California Toxics Rule or CTR), promulgated criteria for priority toxic pollutants for California's surface waters including metals criteria. Freshwater aquatic life criteria for metals are expressed as a function of total hardness. However, aluminum criteria were not promulgated as part of the CTR. Absent numeric aquatic life criteria for aluminum, WQBELs in the Central Valley Region's NPDES

[1] See Order WQO 2001-16 (Napa) and Order WQO 2004-0013 (Yuba City).

permits are based on the Basin Plans' narrative toxicity objective. The Basin Plans' *Policy for Application of Water Quality Objectives* requires the Central Valley Water Board to consider, "*on a case-by-case basis, direct evidence of beneficial use impacts, all material and relevant information submitted by the discharger and other interested parties, and relevant numerical criteria and guidelines developed and/or published by other agencies and organizations. In considering such criteria, the Board evaluates whether the specific numerical criteria which are available through these sources and through other information supplied to the Board, are relevant and appropriate to the situation at hand and, therefore, should be used in determining compliance with the narrative objective.*" Relevant information includes, but is not limited to the following: (1) USEPA Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses, (2) USEPA Ambient Water Quality Criteria (AWQC), (3) AWQC–Correction, and (4) site-specific aluminum studies conducted by dischargers within the Central Valley Region. (Basin Plan, p. IV.-17.00; *see also,* 40 CFR 122.44(d)(vi).)

USEPA's *Ambient Water Quality Criteria for Aluminum (AWQC) - 1988*. In 1988, based on the scientific knowledge of that time, USEPA recommended acute and chronic criteria of 750 µg/L and 87 µg/L, respectively. USEPA attempted to derive the water quality criteria for aluminum in accordance with the steps in their Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses as described below:

1) USEPA calculated 15 Species Mean Acute Values (SMAVs) out of the 26 acute toxicity test results (Table 1, USEPA 1988).

2) From the 15 SMAV's, USEPA compiled 14 Genus Mean Acute Values (GMAVs) (Table 3, USEPA 1988).

3) The four most sensitive species were ranked in the following order:

Rank	Species	Common Name	GMAV
1	*Ceriodaphnia dubia*	Clandoceran	2,648
2	*Salvelinus fontinalis*	Brook trout	3,600
3	*Salmo gairdneri*	Rainbow trout	10,390
4	*Gammarus pseudolimnaeus*	Amphipod	22,000

From these GMAV's, the Final Acute Value (FAV) at a pH between 6.5 and 9.0 was calculated to be 1,496 µg/L. Thus, the acute criterion equals 748 µg/L, which is one-half the FAV.

4) Chronic toxicity values (Table 2) were determined with the three freshwater species, and the acute-chronic ratios (ACR) were calculated as shown below:

Species	Hardness ($CaCO_3$)	pH	Acute Value (µg/L)	Chronic Value (µg/L)	ACR
Ceriodaphnia dubia	50	7.15	1900	1908	0.9958
Dahnia magna	220	8.3	38200	742	51.27
Pimephales promelas	220	7.24 – 8.15	35000	3288	10.64

5) and 6) A Species Mean ACR (SMACR) was not calculated; therefore, the Final ACR (FACR) was determined to be 0.9958, based on the acutely sensitive species (*Ceriodaphnia dubia*). However, according to the Guidelines, the Final ACR cannot be less than 2, because a FACR lower than 2 would result in the Final Chronic Value (FCV) exceeding the acute criterion. Therefore, the default 2 was used as the FACR.

7) The Final Chronic Value (FCV) is calculated as follows:

$$FCV = \frac{FAV}{FACR}$$

The FCV equals the FAV of 1,496 µg/L divided by the FACR of 2, which equates to the same value as the acute criterion, 748 µg/L. However, USEPA lowered the chronic criterion to 87 µg/L, based on striped bass (Buckler, et al.) and brook trout (Cleveland, et al.) studies conducted in sterile lab waters with hardness at approximately 12 mg/L as $CaCO_3$ that, in part, indicated at pH of 6.5, chronic toxicity above aluminum concentrations of 87.2 µg/L (which resulted in zero percent dead after 7 days) and again at pH 6.5-6.6 and concentrations above 88 µg/L (which resulted in 4 percent weight reduction after 60 days), respectively. Dissimilarly, USEPA determined that the Buckler, et al. study was not an appropriate toxicity test to include in the chronic toxicity database for calculating a Final Chronic Equation because (a) the pH of the dilution water was less than 6.5, (b) aluminum was a component of an effluent or mixture, and (c) the control mortality was too high in many tests. For unknown reasons, USEPA also determined that the Cleveland, et al. was not an appropriate chronic toxicity test either.

In the AWQC for Aluminum 1988 document, USEPA discusses the complexities of aluminum speciation, giving evidence that USEPA was aware that aluminum toxicity is related to speciation that is driven by water quality characteristics. USEPA went on to quote several studies that suggest pH is a driver of aluminum toxicity. USEPA went as far as to quote a study by Seip et al. (1984) that stated, *"the simple hydroxides ($[Al(OH)]^{2+}$ and $[Al(OH)_2]^{+}$) are regarded as the most dangerous forms while organically bound Al and polymeric forms are less toxic or essentially harmless."* Nevertheless, USEPA still based the Final Chronic Value on total aluminum concentrations from two studies that were conducted at pH of 6.5 - 6.6 and hardness at approximately 10 to 12 mg/L

as $CaCO_3$ for all surface waters without consideration of the unique and diverse water quality characteristics.

Additionally, concerns with Buckler et al. and Cleveland et al. is that the data is inconsistent within each study. One possibility with the inconsistencies is that aluminum speciation was not measured as part of these tests so the toxic portion of aluminum remains unknown, only the total or dissolved amounts are known. There is no correlation between (a) the amount of total or dissolved aluminum present in a particular sample at a certain pH and hardness and (b) the actual bioavailability and toxicity to aquatic life due to the complex nature of aluminum speciation and other influences like organic material present in surface waters.

In April 1999, USEPA released the National Recommended Water Quality Criteria–Correction. There were no corrections to the 1988 aluminum recommended criteria; however, USEPA recognized that they were aware of field data indicating that many high quality waters in the U.S. contain more than 87 µg/L aluminum, when either total recoverable or dissolved is measured.

Local Environmental Conditions. Twenty-one site-specific aluminum toxicity tests have also been conducted within the Central Valley Region. The most sensitive species as determined by USEPA's 1988 chronic database, *Ceriodaphnia dubia*, was also used as the test species in many of these local site-specific studies.

As shown in the following table, all EC_{50} toxicity study result values are at concentrations of aluminum above 5,000 µg/L. Even at a critically low hardness value of 16 mg/L as $CaCO_3$, aluminum toxicity effects in the studied Central Valley Region's surface waters (Auburn Ravine) show the Total Aluminum EC_{50} value at concentrations above 5,160 µg/L. Thus, this representative data and the toxic effects of aluminum in the Central Valley Region's surface waters is less toxic to resident species. All aluminum toxicity study results in these regional water bodies show that USEPA's recommended 87 µg/L chronic criterion is overly stringent for the Region's circumneutral pH surface waters at hardness ranging from 16 to 156 mg/L as $CaCO_3$.

Table F-8. Central Valley Region Site Specific Toxicity Data

Discharger	Species	Test Waters	Hardness Value	Total Aluminum EC_{50} Value	pH
Auburn	Ceriodaphnia dubia	Effluent	99	>5270	7.44
	" "	Surface Water	16	>5160	7.44
Manteca	" "	Surface Water/Effluent	124	>8800	9.14
	" "	Effluent	117	>8700	7.21
	" "	Surface Water	57	7823	7.58
	" "	Effluent	139	>9500	7.97
	" "	Surface Water	104	>11000	8.28
	" "	Effluent	128	>9700	7.78
	" "	Surface Water	85	>9450	7.85

Discharger	Species	Test Waters	Hardness Value	Total Aluminum EC_{50} Value	pH
	" "	Effluent	106	>11900	7.66
	" "	Surface Water	146	>10650	7.81
Modesto	" "	Surface Water/Effluent	120/156	31604	8.96
Yuba City	" "	Surface Water/Effluent	114/164[1]	>8000	7.60/7.46
Placer County	" "	Effluent	150	>5000	7.4 – 8.7
Manteca	*Daphnia magna*	Surface Water/Effluent	124	>8350	9.14
Modesto	" "	Surface Water/Effluent	120/156	>11900	8.96
Yuba City	" "	Surface Water/Effluent	114/164[1]	>8000	7.60/7.46
Manteca	*Oncorhynchus mykiss* (rainbow trout)	Surface Water/Effluent	124	>8600	9.14
Auburn	" "	Surface Water	16	>16500	7.44
Modesto	" "	Surface Water/Effluent	120/156	>34250	8.96
Yuba City	" "	Surface Water/Effluent	114/164[1]	>8000	7.60/7.46

[1] Hardness values may be biased high because the EDTA titrimetic method is subject to interferences that measure as hardness (barium, cadmium, lead, manganese, strontium, and zinc will be measured as hardness) producing hardness numbers that are likely to be greater than the calculation of hardness based upon the ICP analysis of calcium and magnesium. Upstream receiving water hardness ranged from 30 to 50.9 mg/L as $CaCO_3$ between January 2008 and August 2011. Furthermore, the upstream receiving water hardness was 37 mg/L as $CaCO_3$ on 4 October 2005, seven days prior to the Feasibility Assessment (first phase of a Water Effects Ratio study) sample collection date of 11 October 2005. It is likely that matrix interferences from other metals were responsible for the unexpected hardness values reported by Pacific EcoRisk.

Site-specific Conditions. The Facility discharges to Deer Creek. As described above, USEPA developed the chronic criterion of 87 µg/L under low pH and hardness conditions using the test species brook trout and striped bass. As shown in the table below, monitoring data indicates that the hardness of the effluent and receiving water are much higher than the low hardness conditions under which the chronic criterion for aluminum was developed. Brook trout and striped bass have not been surveyed but are not expected to be present (http://bios.dfg.ca.gov) since striped bass is non-native to California and brook trout is present in higher elevation lakes and streams. Additionally, Deer Creek does not support a resident, self-sustaining population of rainbow trout, which exhibits similar sensitivities as brook trout.

Table F-9. Site-Specific pH and Hardness Characteristics

Parameter	Units	Test Conditions for Applicability of Chronic Criterion		Effluent	Receiving Water
		Striped Bass	Brook Trout		
pH	standard units	6.5	6.5 – 6.6	7.0 – 8.5	6.4 – 7.8
Hardness, Total (as $CaCO_3$)	mg/L	<10	12.3	154 – 180	48 – 200
Aluminum, Total Recoverable	µg/L	87.2	88	<3.8 – 103	70

The Discharger has not conducted a toxicity test for aluminum; however, the City of Auburn conducted two toxicity tests in Auburn Ravine, shown in Table F-8, above. As shown, the test water quality characteristics of Auburn Ravine have similar pH to Deer Creek, pH at 7.4, but the hardness at 16 mg/L as $CaCO_3$ is lower than Deer Creek. Based on these two

primary water quality characteristics (pH and hardness) that drive aluminum speciation, the aluminum toxicity within Auburn Ravine is expected to be similar to, if not more toxic, than in Deer Creek. Therefore, the Auburn Ravine aluminum toxicity test study is relevant and can be conservatively used in this case to determine the specific numerical criteria to be used to implement the Basin Plan's narrative toxicity objective. The Auburn Ravine aluminum toxicity study resulted in a site-specific aluminum objective at 1,079 µg/L. Thus, these results support the conclusion that the 87 µg/L chronic criterion is overly stringent for Deer Creek.

The California Department of Public Health (DPH) has established Secondary MCLs to assist public drinking water systems in managing their drinking water for aesthetic conditions such as taste, color, and odor. The Secondary MCL for aluminum is 200 µg/L and may be used to implement the Basin Plan's narrative chemical constituents objective for protection of the MUN beneficial use.

(b) RPA Results. Order No. R5-2007-0014 established effluent limitations for aluminum based on the chronic criterion of 87 µg/L. However, as described above, new information, including new pH and hardness data collected during the most recent 3 years and the WER study conducted on Auburn Ravine (2010), demonstrate that the chronic criterion of 87 µg/L is overly stringent for Deer Creek. Therefore, the RPA was conducted using the Secondary MCL of 200 µg/L. Based on 25 effluent monitoring results, the MEC for aluminum was 120 µg/L while the maximum receiving water concentration was 70 µg/L, based on one sample. Therefore, the discharge does not show reasonable potential to exceed the Secondary MCL of 200 µg/L for drinking water aesthetic conditions or USEPA acute criterion of 750 µg/L for protection of aquatic species; and thus, the discharge complies with the Basin Plan's narrative toxicity objective. WQBELs for aluminum are not contained in this Order. Removal of effluent limitations for aluminum is in accordance with federal anti-backsliding regulations (see section IV.D.3 of the Fact Sheet).

Chloroform

(c) WQO. Chloroform is a priority pollutant; however, there are not applicable CTR criteria or MCLs for chloroform. DPH has developed a Primary MCL for total trihalomethanes (THMs), which includes chloroform, of 80 µg/L. In addition to chloroform, THMs include bromoform, chlorodibromomethane, and dichlorobromomethane. This Order uses the Primary MCL of 80 µg/L to interpret the narrative toxicity and chemical constituents objective in the Basin Plan for the protection of the MUN beneficial use.

(d) RPA Results. Chloroform was detected, but not quantified, in the effluent in two samples at concentrations of 0.07 µg/L and 0.08 µg/L (MDL of 0.047 µg/L and RL of 0.50 µg/L) based on 155 samples. Chloroform was detected, but not quantified, in the upstream receiving water in one

sample at a concentration of 0.12 µg/L (MDL of 0.047 µg/L and RL of 0.50 µg/L). Therefore, the discharge does not demonstrate reasonable potential to exceed the DPH Primary MCL of 80 µg/L for chloroform and WQBELs for chloroform are not included in this Order. However, chloroform is a constituent of concern in the influent groundwater. This Order establishes a technology-based effluent limitation of 0.5 µg/L for VOCs of concern, which include chloroform, as discussed in section IV.B.2 of this Fact Sheet.

1,1-Dichloroethane

(e) WQO. DPH has adopted a Primary MCL for 1,1-dichloroethane of 5.0 µg/L, which is protective of the Basin Plan's chemical constituent objective.

(f) RPA Results. 1,1-Dichloroethane was not detected in the effluent based on 155 samples or the upstream receiving water based on one sample. Therefore, the discharge does not have reasonable potential to exceed the Primary MCL of 5.0 µg/L for 1,1-dichloroethane and WQBELs for 1,1-dichloroethane are not included in this Order. However, 1,1-dichloroethane is a constituent of concern in the influent groundwater. This Order establishes a technology-based effluent limitation of 0.5 µg/L for VOCs of concern, which include 1,1-dichloroethane, as discussed in section IV.B.2 of this Fact Sheet.

cis-1,2-Dichloroethylene

(g) WQO. DPH has adopted a Primary MCL for cis-1,2-dichloroethylene of 6 µg/L, which is protective of the Basin Plan's chemical constituent objective.

(h) RPA Results. The MEC for cis-1,2-dichloroethylene was 0.37 µg/L based on 155 samples. cis-1,2-Dichloroethylene was not detected in the upstream receiving water based on one sample. Therefore, the discharge does not have reasonable potential to exceed the Primary MCL for cis-1,2-dichloroethylene and WQBELs for cis-1,2-dichloroethylene are not included in this Order. However, cis-1,2-dichloroethylene is a constituent of concern in the influent groundwater. This Order establishes a technology-based effluent limitation of 0.5 µg/L for VOCs of concern, which include cis-1,2-dichloroethylene, as discussed in section IV.B.2 of this Fact Sheet.

Hexachlorobutadiene

(i) WQO. The CTR contains a criterion of 0.44 µg/L for hexachlorobutadiene for the protection of human health for waters from which both water and organisms are consumed. Hexachlorobutadiene is a VOC for which Order R5-2007-0014 included a technology-based MDEL of 0.5 µg/L.

(j) **RPA Results.** Hexachlorobutadiene was detected, but not quantified, in one sample out of 154 effluent samples, at a concentration of 0.47 µg/L, and was not detected in any of the remaining samples. Heachlorobutadiene was not detected in two receiving water samples. Based on the fact that hexachlorbutadiene is not a constituent of concern and was not detected in the influent groundwater, the Central Valley Water Board has determined that the detected sample is not representative of the effluent and that the discharge does not demonstrate reasonable potential to cause or contribute to an in-stream excursion above CTR water quality criteria for hexachlorobutadiene. Monitoring for hexachlorobutadiene is required annually along with other VOCs that were not detected in the effluent to verify that it is not present in the effluent at concentrations that cause or contribute to an exceedance of the CTR criteria.

Lead

(a) **WQO.** The CTR includes hardness-dependent criteria for the protection of freshwater aquatic life for lead. These criteria for lead are presented in dissolved concentrations. USEPA recommends conversion factors to translate dissolved concentrations to total concentrations. Default USEPA translators were used in this Order.

(b) **RPA Results.** Section IV.C.2.e includes procedures for conducting the RPA for lead. The maximum observed upstream receiving water lead concentration was non-detect (MDL = 0.3 µg/L as total recoverable). Based on the lowest observed upstream receiving water hardness of 48 mg/L (as $CaCO_3$) the applicable total recoverable criteria for evaluating the ambient background concentration, are 1.3 µg/L and 32 µg/L, for the chronic and acute criteria respectively. Based on this data, the maximum ambient lead concentration does not exceed the applicable CTR criteria.

As discussed in Section IV.C.2.e for comparing the MEC to the criteria, the reasonable worst-case downstream ambient hardness should be used. Based on a reasonable worst-case downstream hardness of 137 mg/L (as $CaCO_3$), the applicable total recoverable criteria are 4.8 µg/L and 122 µg/L, for the chronic and acute criteria respectively. Three effluent samples for lead are available since adoption of previous Order R5-2007-0014 (i.e., 5.9 µg/L, 1.6 µg/L, and <1.4 µg/L). Based on this data, it appears the MEC exceeds the CTR criteria.

However, the sample result of 5.9 µg/L has been determined to be an outlier and has not been used in the RPA. The Discharger conducted quarterly effluent lead monitoring for discharges to the sedimentation basin from January 2000 through December 2006 for a total of 28 samples that were all non-detect (MDLs ranged from 1 µg/L to 5 µg/L). Adding these 28 samples to the 3 effluent samples and using ½ the MDL for non-detect results, the mean is 1.4 µg/L and the standard deviation is 1.1 µg/L. The 99.9th percentile of the dataset (i.e., 3.3 standard deviations

+ the mean) is 3.3 µg/L. The result of 5.9 µg/L is more than 4 standard deviations from the mean of the data. Values more than 4 standard deviations from the mean are considered outliers.

Excluding the 5.9 µg/L result, the MEC is 1.6 µg/L, which does not exceed the applicable CTR criteria. Therefore, the discharge does not demonstrate reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for lead.

Manganese

(a) **WQO.** The Secondary MCL – Consumer Acceptance Limit for manganese is 50 µg/L, which is used to implement the Basin Plan's chemical constituent objective for the protection of municipal and domestic supply.

(b) **RPA Results.** Secondary MCLs are drinking water standards contained in Title 22 of the California Code of Regulations. Title 22 requires compliance with these standards on an annual average basis, when sampling at least quarterly. Manganese is not a priority pollutant and the RPA procedures in section 1.3 of the SIP are not required. To be consistent with how compliance with the standards is determined, the RPA was conducted based on the calendar annual average manganese concentrations.

Historically, the Discharger had elevated manganese concentrations believed to be a result of the anaerobic environment beneath, and in certain areas downgradient, of the landfill. The Discharger determined that some extraction wells, most notably EW-1, 4, 5, 6, 8, and 11, are responsible for a majority of the manganese entering the treatment system. To comply with the effluent limitations in Order R5-2007-0014 for manganese, the Discharger developed source reduction techniques to reduce manganese concentration in the effluent by supplying air sparging at the groundwater source. Air sparging provides ventilation of the anaerobic zones in the vicinity of the ground water extraction wells exhibiting high manganese levels. The Discharger installed compressors to introduce ambient air into the top of the extraction bores that provides active ventilation, thus reducing the anaerobic zones.

The Discharger also confirmed through testing that between 15 µg/L and 30 µg/L of manganese precipitates out of the effluent along the 6,000 foot effluent outfall pipeline. Although most of the manganese adheres to the pipeline walls, small quantities can break away and accumulate in low portions of the pipeline and can become mobilized during transient conditions, especially during maintenance and plant startup. As part of the Discharger's Operations and Maintenance (O&M) Program, regular pipeline flushes were conducted to the sedimentation basin to preclude loose manganese solids from reaching Deer Creek. In December 2010, the Discharger installed a pipeline shutoff valve and offtake system just

prior to the end of the outfall, which is used to divert water to the sedimentation basin following system shutdowns and during flushing events.

The source control and maintenance procedures have resulted in reduced manganese concentrations in the discharge. Since source reduction techniques have been implemented (completed December 2010), the annual average manganese concentration was 20.3 µg/L, with a range from 6.80 µg/L to 73.4 µg/L, based on 24 samples collected between February 2011 and October 2011. Only one manganese sample was reported in the upstream receiving water, with a concentration of 26.3 µg/L. Therefore, the discharge does not demonstrate reasonable potential to cause or contribute to an in-stream excursion above the Secondary MCL for manganese and the effluent limitations for manganese have not been retained in this Order. Removal of these effluent limitations is in accordance with federal anti-backsliding regulations (see section IV.D.3 of the Fact Sheet). This Order requires quarterly monitoring for manganese and requires the Discharger update and continue to implement the O&M Program.

Methylene Chloride

(c) WQO. The CTR includes a criterion of 4.7 µg/L for methylene chloride for the protection of human health for waters from which both water and organisms are consumed.

(d) RPA Results. Methylene chloride was not detected in the effluent based on 155 samples. Upstream receiving water data for methylene chloride was not available. Therefore, the discharge does not demonstrate reasonable potential to exceed the CTR criterion for the protection of human health of 4.7 µg/L for methylene chloride and WQBELs for methylene chloride are not contained in this Order. However, methylene chloride is a constituent of concern in the influent groundwater. This Order establishes a technology-based effluent limitation of 0.5 µg/L for VOCs of concern, which include methylene chloride, as discussed in section IV.B.2 of this Fact Sheet.

Nickel

(a) WQO. The CTR includes hardness-dependent criteria for the protection of freshwater aquatic life for nickel. These criteria for nickel are presented in dissolved concentrations. USEPA recommends conversion factors to translate dissolved concentrations to total concentrations. Default USEPA translators were used in this Order.

(b) RPA Results. Section IV.C.2.e includes procedures for conducting the RPA for nickel. The maximum observed upstream receiving water nickel concentration was 2.9 µg/L (as total recoverable). Based on the lowest observed upstream receiving water hardness of 48 mg/L (as $CaCO_3$) the

applicable total recoverable criteria for evaluating the ambient background concentration, are 28 µg/L and 250 µg/L, for the chronic and acute criteria respectively. Based on this data, the maximum ambient nickel concentration does not exceed the applicable CTR criteria.

As discussed in Section IV.C.2.e for comparing the MEC to the criteria, the reasonable worst-case downstream ambient hardness should be used. Based on a hardness of 154 mg/L (as $CaCO_3$), the applicable total recoverable criteria are 75 µg/L and 680 µg/L, for the chronic and acute criteria respectively. The MEC for nickel (total recoverable) was 1.3 µg/L, based on 17 samples from November 2008 to October 2011. 11 of the 17 samples were non-detect (MDL = 0.2 µg/L) Based on this data, the MEC does not exceed the applicable CTR criteria.

Order R5-2007-0014 included effluent limitations for nickel based on the CTR hardness dependent criteria for the protection of freshwater aquatic life for nickel. The MEC for nickel and the maximum ambient background for nickel do not exceed the applicable criteria. Therefore, the discharge does not demonstrate reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria. Therefore, the effluent limitations for nickel have not been retained in this Order. Removal of these effluent limitations is in accordance with federal anti-backsliding regulations (see section IV.D.3 of the Fact Sheet).

Persistent Chlorinated Hydrocarbon Pesticides

(a) WQO. The Basin Plan requires that no individual pesticides shall be present in concentrations that adversely affect beneficial uses; discharges shall not result in pesticide concentrations in bottom sediments or aquatic life that adversely affect beneficial uses; persistent chlorinated hydrocarbon pesticides shall not be present in the water column at detectable concentrations; and pesticide concentrations shall not exceed those allowable by applicable antidegradation policies. Persistent chlorinated hydrocarbon pesticides include aldrin; alpha-BHC; beta-BHC; gamma-BHC; delta-BHC; chlordane; 4,4-DDT; 4,4-DDE; 4,4-DDD; dieldrin; alpha-endosulfan; beta-endosulfan; endosulfan sulfate; endrin; endrin aldehyde; heptachlor; heptachlor epoxide; and toxaphene. The CTR also contains water quality criteria for individual pesticides for the protection of water and organisms. Order R5-2007-0014 included effluent limitations for persistent chlorinated hydrocarbon (i.e., organochlorine) pesticides based on the Basin Plan objective.

(b) RPA Results. Effluent and upstream receiving water monitoring of individual persistent chlorinated hydrocarbon pesticides resulted in no detected results for each individual persistent chlorinated hydrocarbon pesticide. Therefore, the discharge does not demonstrate reasonable potential to cause or contribute to an in-stream excursion above the Basin Plan objective or CTR criteria for persistent chlorinated hydrocarbon pesticides and the effluent limitations for persistent chlorinated

hydrocarbon pesticides have not been retained in this Order. Removal of these effluent limitations is in accordance with federal anti-backsliding regulations (see section IV.D.3 of the Fact Sheet).

Tetrachloroethylene

(c) WQO. The CTR includes a criterion of 0.8 µg/L for tetrachloroethylene for the protection of human health for waters from which both water and organisms are consumed.

(d) RPA Results. Tetrachloroethylene was not detected in the effluent based on 155 samples or the upstream receiving water based on one sample. Therefore, the discharge does not demonstrate reasonable potential to exceed the CTR criterion for the protection of human health for tetrachloroethylene. WQBELs for tetrachloroethylene are not contained in this Order. However, tetrachloroethylene is a constituent of concern in the influent groundwater. This Order establishes a technology-based effluent limitation of 0.5 µg/L for VOCs of concern, which include tetrachloroethylene, as discussed in section IV.B.2 of this Fact Sheet.

trans-1,2-Dichloroethylene

(e) WQO. DPH has adopted a Primary MCL for trans-1,2-dichloroethylene of 10 µg/L, which is protective of the Basin Plan's chemical constituent objective.

(f) RPA Results. trans-1,2-Dichloroethylene was not detected in the effluent based on 155 samples or the upstream receiving water based on one sample. Therefore, the discharge does not have reasonable potential to exceed the Primary MCL for trans-1,2-dichloroethylene and WQBELs for trans-1,2-dichloroethylene are not contained in this Order. However, trans-1,2-dichloroethylene is a constituent of concern in the influent groundwater. This Order establishes a technology-based effluent limitation of 0.5 µg/L for VOCs of concern, which include trans-1,2-dichloroethylene, as discussed in section IV.B.2 of this Fact Sheet.

Trichloroethylene

(g) WQO. The CTR includes a criterion of 2.7 µg/L for trichloroethylene for the protection of human health for waters from which both water and organisms are consumed.

(h) RPA Results. Trichloroethylene was detected, but not quantified, in the effluent in one sample at a concentration of 0.3 µg/L (MDL of 0.18 µg/L, RL of 0.50 µg/L) based on 155 samples. Trichloroethylene was not detected in the upstream receiving water based on one sample. Therefore, the discharge does not have reasonable potential to exceed the CTR criterion for the protection of human health for trichloroethylene and WQBELs for trichloroethylene are not included in this Order. However, trichloroethylene is a constituent of concern in the influent

groundwater. This Order establishes a technology-based effluent limitation of 0.5 µg/L for VOCs of concern, which include trichloroethylene, as discussed in section IV.B.2 of this Fact Sheet.

Trichlorofluoromethane

(i) WQO. DPH has adopted a Primary MCL for trichlorofluoromethane of 150 µg/L, which is protective of the Basin Plan's chemical constituent objective.

(j) RPA Results. Trichlorofluoromethane was not detected in the effluent based on 155 samples or the upstream receiving water based on one sample. Therefore, the discharge does not have reasonable potential to exceed the Primary MCL for trichlorofluoromethane and WQBELs for trichlorofluoromethane are not included in this Order. However, trichlorofluoromethane is a constituent of concern in the influent groundwater. This Order establishes a technology-based effluent limitation of 0.5 µg/L for VOCs of concern, which include trichlorofluoromethane, as discussed in section IV.B.2 of this Fact Sheet.

Vinyl Chloride

(k) WQO. DPH has adopted a Primary MCL for vinyl chloride of 0.5 µg/L, which is protective of the Basin Plan's chemical constituent objective.

(l) RPA Results. Vinyl chloride was not detected in the effluent based on 155 samples or the upstream receiving water based on one sample. Therefore, the discharge does not have reasonable potential to exceed the Primary MCL of 0.5 µg/L for vinyl chloride and WQBELs for vinyl chloride are not included in this Order. However, vinyl chloride is a constituent of concern in the influent groundwater. This Order establishes a technology-based effluent limitation of 0.5 µg/L for VOCs of concern, which include vinyl chloride, as discussed in section IV.B.2 of this Fact Sheet.

Salinity

(a) WQO. The Basin Plan contains a narrative chemical constituent objective, a narrative toxicity objective, and, for certain specified water bodies, numeric water quality objectives for electrical conductivity, total dissolved solids, sulfate, and chloride. There are no Basin Plan site-specific objectives for salinity for Deer Creek. Therefore, this Order applies the Basin Plan's narrative objectives.

For protection of the MUN beneficial use, this Order implements the narrative chemical constituent objective using the state MCLs, which are incorporated in the Basin Plan. There are no USEPA numeric water quality criteria for the protection of agriculture, industrial, and live stock usage. Numeric values for the protection of these uses are typically done based on site-specific conditions and evaluations to determine the

appropriate constituent threshold necessary to interpret the Basin Plan's narrative chemical constituent objective.

The Central Valley Water Board is currently implementing the CV-SALTS initiative to develop a Basin Plan Amendment that will establish a salt and nitrate Management Plan for the Central Valley. Through this effort the Basin Plan will be amended to define how the narrative water quality objective is to be interpreted for the protection of agricultural use. All studies conducted through this Order to establish an agricultural limit to implement the narrative objective will be reviewed by and consistent with the efforts currently underway by CV-SALTS.

The USEPA Ambient Water Quality Criteria for Chloride recommends acute and chronic criteria for the protection of aquatic life beneficial use. There are no USEPA water quality criteria for the protection of aquatic life for electrical conductivity, total dissolved solids, and sulfate.

Table F-10. Salinity Water Quality Criteria/Objectives

Parameter	Agricultural WQ Goal[1]	Secondary MCL[2]	USEPA NAWQC	Effluent	
				Average	Maximum
EC (µmhos/cm)	Varies[3]	900, 1600, 2200	N/A	368	425
TDS (mg/L)	Varies	500, 1000, 1500	N/A	260	584
Sulfate (mg/L)	Varies	250, 500, 600	N/A	No Data	No Data
Chloride (mg/L)	Varies	250, 500, 600	860 1-hr 230 4-day	No Data	No Data

1 Narrative chemical constituent objective of the Basin Plan. Procedures for establishing the applicable numeric limitation to implement the narrative objective can be found in the Policy for Application of Water Quality, Chapter IV, Section 8 of the Basin Plan., However, the Basin Plan does not require improvement over naturally occurring background concentrations. In cases where the natural background concentration of a particular constituent exceeds an applicable water quality objective, the natural background concentration will be considered to comply with the objective.

2 The secondary MCLs are stated as a recommended level, upper level, and a short-term maximum level.

3 The EC level in irrigation water that harms crop production depends on the crop type, soil type, irrigation methods, rainfall, and other factors. An EC level of 700 µmhos/cm is generally considered to present no risk of salinity impacts to crops. However, many crops are grown successfully with higher salinities.

(1) Chloride. The secondary MCL for chloride is 250 mg/L, as a recommended level, 500 mg/L as an upper level, and 600 mg/L as a short-term maximum. The Central Valley Water Board must determine the applicable numeric limit to implement the narrative objective for the protection of agricultural supply. The most limiting agricultural water quality goal to interpret the narrative chemical constituent objective for chloride, is 106 mg/L as a long-term average based on Water Quality for Agriculture, Food and Agriculture Organization of the United Nations—Irrigation and Drainage Paper No. 29, Rev. 1 (R.S. Ayers and D.W. Westcot, Rome, 1985). The 106 mg/L water quality goal is intended to protect against adverse effects on sensitive crops when

irrigated via sprinklers. However, the agricultural water quality goal is not a site-specific goal or objective, but rather a general measure to protect salt-sensitive crops. Site-specific levels of chloride for the receiving waters are necessary to interpret the narrative chemical constituents objective for protection of agricultural supply.

USEPA Ambient Water Quality Criteria for Chloride recommends acute (1-hour) and chronic (4-day) criteria for the protection of freshwater aquatic life of 860 mg/L and 230 mg/L, respectively.

(2) Electrical Conductivity. The secondary MCL for EC is 900 µmhos/cm as a recommended level, 1600 µmhos/cm as an upper level, and 2200 µmhos/cm as a short-term maximum. The Central Valley Water Board must determine the applicable numeric limit to implement the narrative chemical constituent objective for the protection of agricultural supply. The most limiting agricultural water quality goal to interpret the narrative chemical constituent objective for EC is 700 µmhos/cm as a long-term average based on Water Quality for Agriculture, Food and Agriculture Organization of the United Nations—Irrigation and Drainage Paper No. 29, Rev. 1 (R.S. Ayers and D.W. Westcot, Rome, 1985). However, the 700 µmhos/cm agricultural water quality goal is not a site-specific goal or objective, but rather a general measure of EC that was determined to protect salt-sensitive crops, such as beans, carrots, turnips, and strawberries. Most other crops can tolerate higher EC concentrations without harm. Site-specific levels of EC for the receiving waters to interpret the narrative chemical constituents objective in the Basin Plan for protection of agricultural supply are necessary. Overall, salinity of the agricultural irrigation water must be maintained at levels in which growers do not need to take measures to minimize or eliminate any harmful impacts.

(3) Sulfate. The secondary MCL for sulfate is 250 mg/L as a recommended level, 500 mg/L as an upper level, and 600 mg/L as a short-term maximum.

(4) Total Dissolved Solids. The secondary MCL for TDS is 500 mg/L as a recommended level, 1000 mg/L as an upper level, and 1500 mg/L as a short-term maximum. The Central Valley Water Board must determine the applicable numeric limit to implement the narrative chemical constituent objective for the protection of agricultural supply. The most limiting agricultural water quality goal to interpret the narrative chemical constituent objective for TDS is 450 mg/L as a long-term average based on Water Quality for Agriculture, Food and Agriculture Organization of the United Nations—Irrigation and Drainage Paper No. 29, Rev. 1 (R.S. Ayers and D.W. Westcot, Rome, 1985). However, the 450 mg/L agricultural water quality goal is not a site-specific goal or objective, but rather a general measure of TDS that was determined to protect salt-sensitive crops, such as beans,

carrots, turnips, and strawberries. Most other crops can tolerate higher EC concentrations without harm. Site-specific levels of TDS for the receiving waters to interpret the narrative chemical constituents objective in the Basin Plan for protection of agricultural supply are necessary. Overall, salinity of the agricultural irrigation water must be maintained at levels in which growers do not need to take measures to minimize or eliminate any harmful impacts.

(b) RPA Results

(1) Chloride. Effluent data for chloride is not available. Background concentrations in Deer Creek ranged from 7.8 mg/L to 26.9 mg/L, with an average of 12.7 mg/L, for five samples collected by the Discharger from December 2009 through February 2011.

(2) Electrical Conductivity. A review of the Discharger's monitoring reports shows an average effluent EC of 368 µmhos/cm, with a range from 326 µmhos/cm to 425 µmhos/cm. The background receiving water EC averaged 366 µmhos/cm. Based on these results, the discharge does not have reasonable potential to cause or contribute to an instream excursion of the applicable water quality objectives for EC.

(3) Sulfate. Effluent data for sulfate is not available. Upstream receiving water concentrations in Deer Creek ranged from 7.1 mg/L to 24 mg/L, with an average of 11.6 mg/L.

(4) Total Dissolved Solids. The average TDS effluent concentration was 260 mg/L with concentrations ranging from 51 mg/L to 584 mg/L. The background receiving water TDS ranged from 104 mg/L to 199 mg/L, with an average of 152 mg/L. Based on these results, the discharge does not have reasonable potential to cause or contribute to an instream excursion of the applicable water quality objectives for TDS.

(c) WQBELs. The discharge does not have reasonable potential to cause or contribute to an in-stream excursion of water quality objectives for salinity, therefore WQBELs are not needed. However, since the Facility discharges to Deer Creek, a tributary of the Cosumnes River and eventually the Sacramento-San Joaquin Delta, of additional concern is the salt contribution to Delta waters. Allowing the Discharger to increase its current salt loading is contrary to the Region-wide effort to address salinity in the Central Valley. Therefore, Order No. R5-2007-0014 included a performance-based effluent limitation of 367 mg/L for TDS as a monthly average to limit the discharge to current levels. This Order retains the performance-based effluent limitation for TDS. Furthermore, in order to ensure that the Discharger will continue to control the discharge of salinity, this Order includes a requirement to develop and implement a salinity evaluation and minimization plan.

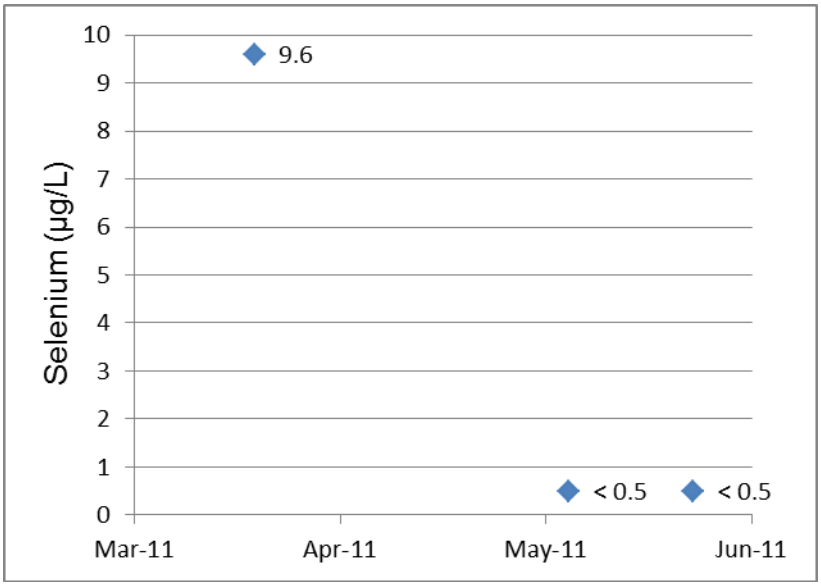
(d) Plant Performance and Attainability. The effluent limitations established in this Order for TDS are retained from Order R5-2007-0014 and are based on the observed performance of the existing treatment system. Based on the performance of the Facility, the Central Valley Water Board concludes, that continued compliance with these effluent limitations is feasible.

c. Constituents with Limited Data. Reasonable potential cannot be determined for the following constituents because effluent data are limited or ambient background concentrations are not available. The Discharger is required to continue to monitor for these constituents in the effluent using analytical methods that provide the best feasible detection limits. When additional data become available, further analysis will be conducted to determine whether to add numeric effluent limitations or to continue monitoring.

i. Selenium

(a) WQO. The CTR includes maximum 1-hour average and 4-day average criteria of 20 µg/L and 5 µg/L, respectively, for total recoverable selenium for the protectin of freshwater aquatic life.

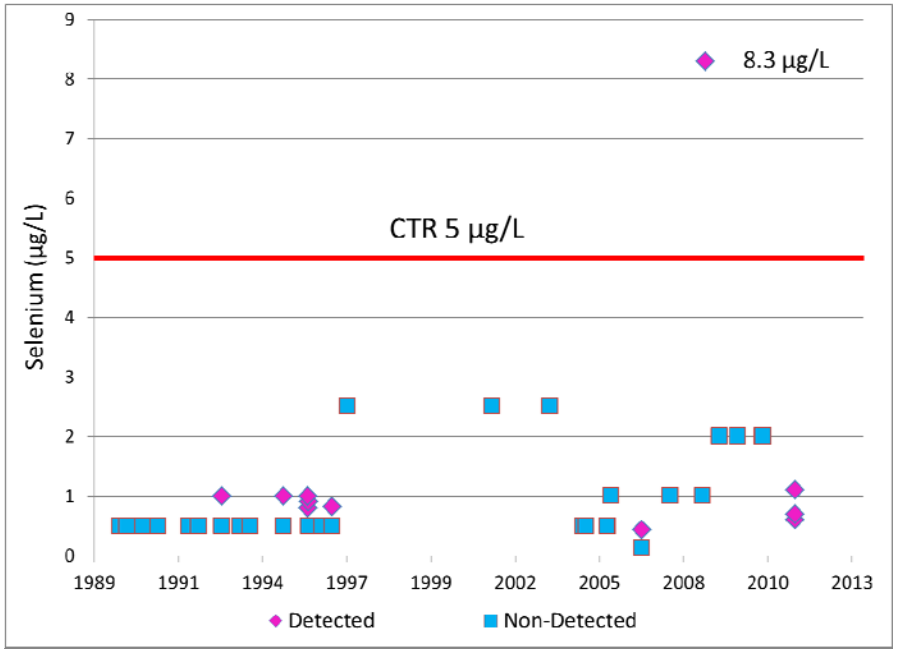
(b) RPA Results. Selenium was not detected in the upstream receiving water. Selenium was detected in the effluent discharge at a concentration of 9.6 µg/L on 4 April 2011. The Discharger collected two additional effluent samples in May and June 2011 that were non-detect for selenium (see figure below).



During the period when the effluent selenium samples were collected the Discharger was conducting new operation and maintenance procedures on the air stripping towers. The Discharger collected metals samples due to concern that the previous maintenance procedures could have been releasing metals, because the towers are known to experience a buildup of manganese. The April 2011 sample was collected prior to a new acid

wash procedure that was conducted on the towers at the end of April 2011. The towers had not been acid washed since 2007. The two samples taken in May and June 2011 immediately after the new acid wash procedures produced non-detect results for selenium. The Discharger has included the new acid wash maintenance procedures in their facility O&M manual to take place every six months.

Although selenium in groundwater may be of concern in some areas of the Sacramento-San Joaquin Valley, such as the western portion of the valley near the City of Davis, selenium is not a concern in the groundwater aquifers on the east side of the valley, such as in vicinity of the Facility. The figure below shows 97 selenium groundwater samples that were collected in the area where the groundwater is being extracted for cleanup between 1989 and 2011, and only one of the 97 samples was detected above the CTR criterion. Due to the amount of data, it may be concluded that this one data point does not appear to represent the groundwater, and may indicate contamination could have occurred in the sampling process. The dataset as a whole demonstrates that the concentration of selenium is low and confirms the Board's understanding of the groundwater in this area.



Section 1.3, Step 8 of the SIP allows the Central Valley Water Board to require additional monitoring for a pollutant in place of an effluent limitation if data are unavailable or insufficient. Due to the limited effluent data set and lack of information to determine if the detected sample is representative of the discharge, the Central Valley Water Board is requiring additional sampling to provide a robust dataset to conduct the reasonable potential analysis. Selenium is not a constituent of concern in

the groundwater and the effluent sampling occurred while the Discharger was implementing new maintenance procedures. Therefore, until the Discharger fully implements its maintenance procedures, and sufficient data is collected to clearly represent the effluent, it remains unknown if there is reasonable potential for the discharge to cause or contribute to an exceedance of water quality criteria. This Order requires the Discharger to immediately conduct a constituent study to evaluate the presence of selenium in the discharge (e.g., monthly selenium monitoring for 1 year). Should monitoring results indicate that the discharge has reasonable potential to cause or contribute to an exceedance of a water quality standard, this Order requires the Discharger to submit a treatment feasibility study and work plan to reduce selenium. Additionally, this Order will be reopened to add a water quality-based effluent limitation for selenium.

d. Constituents with Reasonable Potential. The Central Valley Water Board finds that the discharge has a reasonable potential to cause or contribute to an in-stream excursion above a water quality standard for chlorine residual, pH, and salinity. WQBELs for these constituents are included in this Order. A summary of the RPA is provided in Attachment G, and a detailed discussion of the RPA for each constituent is provided below.

i. Chlorine Residual

(a) WQO. USEPA developed NAWQC for protection of freshwater aquatic life for chlorine residual. The recommended 4-day average (chronic) and 1-hour average (acute) criteria for chlorine residual are 0.011 µg/L and 0.019 µg/L, respectively. These criteria are protective of the Basin Plan's narrative toxicity objective.

(b) RPA Results. The Discharger uses chlorine for prevention and treatment of biofouling in the extraction wells to maintain VOC removal efficiency prior to discharge to Deer Creek. Chlorine was not detected in the effluent in 155 samples, but chlorine is extremely toxic to aquatic life. Due to the existing chlorine use for well maintenance and the potential for chlorine to be discharged, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the NAWQC.

(c) WQBELs. The USEPA *Technical Support Document for Water Quality-Based Toxics Control* [EPA/505/2-90-001] contains statistical methods for converting chronic (4-day) and acute (1-hour) aquatic life criteria to average monthly and maximum daily effluent limitations based on the variability of the existing data and the expected frequency of monitoring. However, because chlorine is an acutely toxic constituent that can and will be monitored continuously for a period after well maintenance events, an average 1-hour limitation is considered more appropriate than an average daily limitation. This Order contains a 4-day average effluent limitation and 1-hour average effluent limitation for chlorine residual of 0.011 µg/L and 0.019 µg/L, respectively, based on USEPA's NAWQC, which

implements the Basin Plan's narrative toxicity objective for protection of aquatic life.

(d) **Plant Performance and Attainability.** Chlorine was not detected in the effluent in 155 samples. Additionally, chlorine is used as a disinfectant only during maintenance activities and the Discharger discharges to the sedimentation basin during groundwater treatment system maintenance operations. The Central Valley Water Board concludes, therefore, that compliance with chlorine residual effluent limitations is feasible.

pH

(e) **WQO.** The Basin Plan includes a water quality objective for surface waters (except for Goose Lake) that the *"…pH shall not be depressed below 6.5 nor raised above 8.5."*

(f) **RPA Results.** Order R5-2007-0014 required weekly pH monitoring. Based on 150 samples from November 2008 through October 2011, the minimum and maximum pH levels reported were 7.0 and 8.5, respectively. The discharge of treated groundwater has a reasonable potential to cause or contribute to an excursion above the Basin Plan's numeric objectives for pH.

(g) **WQBELs.** Effluent limitations for pH of 6.5 as an instantaneous minimum and 8.5 as an instantaneous maximum are included in this Order based on protection of the Basin Plan objectives for pH. These effluent limits are retained from Order R5-2007-0014.

(h) **Plant Performance and Attainability.** Based on 150 effluent samples, the minimum pH was 7.0 and the maximum pH was 8.5. The Central Valley Water Board concludes, therefore, that immediate compliance with these effluent limitations is feasible.

Whole Effluent Toxicity (See Section IV.C.5)

4. WQBEL Calculations

a. This Order includes WQBELs for chlorine residual, pH, and TDS. The general methodology for calculating WQBELs based on the different criteria/objectives is described in subsections IV.C.4.b through e, below.

b. Effluent Concentration Allowance. For each water quality criterion/objective, the ECA is calculated using the following steady-state mass balance equation from Section 1.4 of the SIP:

$$ECA = C + D(C - B) \quad \text{where } C>B, \text{ and}$$
$$ECA = C \quad \text{where } C \leq B$$

where:

ECA = effluent concentration allowance
D = dilution credit
C = the priority pollutant criterion/objective
B = the ambient background concentration.

According to the SIP, the ambient background concentration (B) in the equation above shall be the observed maximum with the exception that an ECA calculated from a priority pollutant criterion/objective that is intended to protect human health from carcinogenic effects shall use the arithmetic mean concentration of the ambient background samples. For ECAs based on MCLs, which implement the Basin Plan's chemical constituents objective and are applied as annual averages, an arithmetic mean is also used for B due to the long-term basis of the criteria.

c. Basin Plan Objectives and MCLs. For WQBELs based on site-specific numeric Basin Plan objectives or MCLs, the effluent limitations are applied directly as the ECA as either an MDEL, AMEL, or average annual effluent limitations, depending on the averaging period of the objective.

d. Aquatic Toxicity Criteria. WQBELs based on acute and chronic aquatic toxicity criteria are calculated in accordance with Section 1.4 of the SIP. The ECAs are converted to equivalent long-term averages (i.e., LTA_{acute} and $LTA_{chronic}$) using statistical multipliers and the lowest LTA is used to calculate the AMEL and MDEL using additional statistical multipliers.

e. Human Health Criteria. WQBELs based on human health criteria, are also calculated in accordance with Section 1.4 of the SIP. The ECAs are set equal to the AMEL and a statistical multiplier was used to calculate the MDEL.

$$AMEL = mult_{AMEL}\left[\min\left(\overbrace{M_A ECA_{acute}}^{LTA_{acute}}, M_C ECA_{chronic}\right)\right]$$

$$MDEL = mult_{MDEL}\left[\min\left(M_A ECA_{acute}, \underbrace{M_C ECA_{chronic}}_{LTA_{chronic}}\right)\right]$$

$$MDEL_{HH} = \left(\frac{mult_{MDEL}}{mult_{AMEL}}\right) AMEL_{HH}$$

where:
$mult_{AMEL}$ = statistical multiplier converting minimum LTA to AMEL
$mult_{MDEL}$ = statistical multiplier converting minimum LTA to MDEL
M_A = statistical multiplier converting acute ECA to LTA_{acute}
M_C = statistical multiplier converting chronic ECA to $LTA_{chronic}$

Summary of Water Quality-Based Effluent Limitations
Discharge Point No. 001

Table F-11. Summary of Water Quality-Based Effluent Limitations

Parameter	Units	Effluent Limitations			
		Average Monthly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum
pH	standard units	--	--	6.5	8.5
Chlorine, Total Residual	mg/L	0.011[1]	0.019[2]	--	--
Total Dissolved Solids	mg/L	367	--	--	--

[1] Applied as a 4-day average effluent limitation.
[2] Applied as a 1-hour average effluent limitation.

5. Whole Effluent Toxicity (WET)

For compliance with the Basin Plan's narrative toxicity objective, this Order requires the Discharger to conduct whole effluent toxicity testing for acute and chronic toxicity, as specified in the Monitoring and Reporting Program (Attachment E section V.). This Order also contains effluent limitations for acute toxicity and requires the Discharger to implement best management practices to investigate the causes of, and identify corrective actions to reduce or eliminate effluent toxicity.

a. Acute Aquatic Toxicity. The Basin Plan contains a narrative toxicity objective that states, "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.*" (Basin Plan at page III-8.00) The Basin Plan also states that, *"…effluent limits based upon acute biotoxicity tests of effluents will be prescribed where appropriate…*". USEPA Region 9 provided guidance for the development of acute toxicity effluent limitations in the absence of numeric water quality objectives for toxicity in its document titled "Guidance for NPDES Permit Issuance", dated February 1994. In section B.2. "Toxicity Requirements" (pgs. 14-15) it states that, "*In the absence of specific numeric water quality objectives for acute and chronic toxicity, the narrative criterion 'no toxics in toxic amounts' applies. Achievement of the narrative criterion, as applied herein, means that ambient waters shall not demonstrate for acute toxicity: 1) less than 90% survival, 50% of the time, based on the monthly median, or 2) less than 70% survival, 10% of the time, based on any monthly median. For chronic toxicity,*

ambient waters shall not demonstrate a test result of greater than 1 TUc." Acute toxicity testing conducted between November 2008 through October 2011 resulted in 100 percent survival. Consistent with Order R5-2007-0014, effluent limitations for acute toxicity have been included in this Order as follows:

Acute Toxicity. Survival of aquatic organisms in 96-hour bioassays of undiluted waste shall be no less than:

Minimum for any one bioassay---------- 70%
Median for any three consecutive bioassays ---------- 90%

b. **Chronic Aquatic Toxicity.** The Basin Plan contains a narrative toxicity objective that states, "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.*" (Basin Plan at page III-8.00) Based on chronic WET testing performed by the Discharger from November 2008 through October 2011, the discharge has reasonable potential to cause or contribute to an in-stream excursion above of the Basin Plan's narrative toxicity objective, as shown in Table F-12 below.

Table F-12. Whole Effluent Chronic Toxicity Testing Results

Date	Water Flea *Ceriodaphnia dubia*		Fathead Minnow *Pimephales promelas*		Green Algae *Selenastrum capricornutum*
	Survival (TUc)	Reproduction (TUc)	Survival (TUc)	Growth (TUc)	Growth (TUc)
3 December 2008	--	--	1	1	--
15 December 2008	--	--	--	--	1
7 January 2009	--	--	1	1	--
26 January 2009	1	>1	--	--	--
2 February 2009	--	--	--	--	1
16 March 2009	1	1	--	--	--
15 April 2009	--	--	1	1	
18 May 2009	1	1	--	--	--
15 July 2009	--	--	1	1	
27 July 2009	--	--	--	--	1
3 August 2009	1	1	--	--	--
18 November 2009	--	--	1	1	--
30 November 2009	--	--	--	--	1
6 January 2010	--	--	1	1	
25 January 2010	--	--	--	--	1
22 March 2010	1	1	--	--	--
6 April 2010	1	1	--	--	--
7 April 2010	--	--	1	1	--
26 April 2010	--	--	--	--	1
14 July 2010	--	--	1	1	--
26 July 2010	1	>1	--	--	--
30 August 2010	1	1	--	--	--
15 November 2010	--	--	--	--	1
1 December 2010	--	--	1	1	--
6 December 2010	1	>1	--	--	--
3 January 2011	1	2	--	--	--

Date	Water Flea *Ceriodaphnia dubia*		Fathead Minnow *Pimephales promelas*		Green Algae *Selenastrum capricornutum*
	Survival (TUc)	Reproduction (TUc)	Survival (TUc)	Growth (TUc)	Growth (TUc)
24 January 2011	1	1	--	--	--
2 February 2011	--	--	1	1	--
7 February 2011	1	>1	--	--	1
7 March 2011	1	>1	--	--	--
15 March 2011	1	>1	--	--	--
6 April 2011	--	--	1	1	
14 April 2011	--	--	--	--	1
7 June 2011	1	>1	--	--	--
27 June 2011	1	>1	--	--	--
12 July 2011	--	--	1	1	--
19 July 2011	--	--	--	--	>1
6 September 2011	1	1	--	--	--
26 September 2011	1	1	--	--	--
17 October 2011	1	>1	--	--	--
31 October 2011	1	>1	--	--	--

No dilution has been granted for the chronic condition. Therefore, chronic toxicity testing results exceeding 1 chronic toxicity unit (TUc) demonstrates the discharge has a reasonable potential to cause or contribute to an exceedance of the Basin Plan's narrative toxicity objective.

Numeric chronic WET effluent limitations have not been included in this Order. The SIP contains implementation gaps regarding the appropriate form and implementation of chronic toxicity limits. This has resulted in the petitioning of a NPDES permit in the Los Angeles Region[1] that contained numeric chronic toxicity effluent limitations. To address the petition, the State Water Board adopted WQO 2003-012 directing its staff to revise the toxicity control provisions in the SIP. The State Water Board states the following in WQO 2003-012, "*In reviewing this petition and receiving comments from numerous interested persons on the propriety of including numeric effluent limitations for chronic toxicity in NPDES permits for publicly-owned treatment works that discharge to inland waters, we have determined that this issue should be considered in a regulatory setting, in order to allow for full public discussion and deliberation. We intend to modify the SIP to specifically address the issue. We anticipate that review will occur within the next year. We therefore decline to make a determination here regarding the propriety of the final numeric effluent limitations for chronic toxicity contained in these permits.*" The process to revise the SIP is currently underway. Proposed changes include clarifying the appropriate form of effluent toxicity limits in NPDES permits and general expansion and standardization of toxicity control implementation related to the NPDES

[1] In the Matter of the Review of Own Motion of Waste Discharge Requirements Order Nos. R4-2002-0121 [NPDES No. CA0054011] and R4-2002-0123 [NPDES NO. CA0055119] and Time Schedule Order Nos. R4-2002-0122 and R4-2002-0124 for Los Coyotes and Long Beach Wastewater Reclamation Plants Issued by the California Regional Water Quality Control Board, Los Angeles Region SWRCB/OCC FILES A-1496 AND 1496(a)

permitting process. Since the toxicity control provisions in the SIP are under revision it is infeasible to develop numeric effluent limitations for chronic toxicity. Therefore, this Order requires that the Discharger meet best management practices for compliance with the Basin Plan's narrative toxicity objective, as allowed under 40 CFR 122.44(k).

To ensure compliance with the Basin Plan's narrative toxicity objective, the Discharger is required to conduct chronic WET testing, as specified in the Monitoring and Reporting Program (Attachment E, section V.). Furthermore, the Special Provision contained at VI.C.2.a. of this Order requires the Discharger to investigate the causes of, and identify and implement corrective actions to reduce or eliminate effluent toxicity. If the discharge demonstrates toxicity exceeding the numeric toxicity monitoring trigger, the Discharger is required to initiate a Toxicity Reduction Evaluation (TRE) in accordance with an approved TRE workplan. The numeric toxicity monitoring trigger is not an effluent limitation; it is the toxicity threshold at which the Discharger is required to perform accelerated chronic toxicity monitoring, as well as, the threshold to initiate a TRE if effluent toxicity has been demonstrated.

D. Final Effluent Limitations

1. Mass-based Effluent Limitations

40 CFR 122.45(f)(1) requires effluent limitations be expressed in terms of mass, with some exceptions, and 40 CFR 122.45(f)(2) allows pollutants that are limited in terms of mass to additionally be limited in terms of other units of measurement. This Order does not include effluent limitations expressed in terms of mass. Pursuant to the exceptions to mass limitations provided in 40 CFR 122.45(f)(1), some effluent limitations are not expressed in terms of mass, such as pH, and when the applicable standards are expressed in terms of concentration (e.g., total residual chlorine) and mass limitations are not necessary to protect the beneficial uses of the receiving water.

2. Averaging Periods for Effluent Limitations

40 CFR 122.45(d) requires maximum daily and average monthly discharge limitations for all dischargers other than publicly owned treatment works unless impracticable. The rationale for using alternative averaging periods for chlorine residual, pH, and TDS is discussed in section IV.C.3 of this Fact Sheet.

3. Satisfaction of Anti-Backsliding Requirements

The CWA specifies that a revised permit may not include effluent limitations that are less stringent than the previous permit unless a less stringent limitation is justified based on exceptions to the anti-backsliding provisions contained in CWA sections 402(o) or 303(d)(4), or, where applicable, 40 CFR 122.44(l).

The effluent limitations in this Order are at least as stringent as the effluent limitations in Order R5-2007-0014, with the exception of effluent limitations for aluminum, manganese, nickel, persistent chlorinated hydrocarbon pesticides, and

VOCs that have not been detected in the influent groundwater. The effluent limitations for these pollutants are less stringent than those in Order R5-2007-0014. This relaxation of effluent limitations is consistent with the anti-backsliding requirements of the CWA and federal regulations.

a. **CWA section 402(o)(1) and 303(d)(4).** CWA section 402(o)(1) specifies that, in the case of effluent imitations established on the basis of CWA section 301(b)(1)(C) (i.e., WQBELs), a permit may not be renewed, reissued, or modified to contain effluent limitations which are less stringent than the comparable effluent limitations in the previous permit except in compliance with CWA section 303(d)(4). The effluent limitations for aluminum, manganese, nickel, and persistent chlorinated hydrocarbon pesticides established in Order R5-2007-0014 are WQBELs and may be relaxed if the requirements of CWA section 303(d)(4) are satisfied.

   CWA section 303(d)(4) has two parts: paragraph (A) which applies to nonattainment waters and paragraph (B) which applies to attainment waters. For attainment waters, CWA section 303(d)(4)(B) specifies that a limitation based on a water quality standard may be relaxed where the action is consistent with the antidegradation policy. The 303(d) listings for Deer Creek and the Cosumnes River below Michigan Bar, as described in section III.D.1 of this Fact Sheet, do not include aluminum, manganese, nickel, or persistent chlorinated hydrocarbon pesticides. Thus, the receiving water is an attainment water for these constituents[1]. As discussed in section IV.D.4, the removal of WQBELs for aluminum, manganese, nickel, and persistent chlorinated hydrocarbon pesticides is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution No. 68-16. Therefore, the modifications to these effluent limitations do not violate anti-backsliding requirements.

b. **CWA section 402(o)(2).** CWA section 402(o)(2) provides several exceptions to the anti-backsliding regulations. CWA 402(o)(2)(B)(i) allows a renewed, reissued, or modified permit to contain a less stringent effluent limitation for a pollutant if information is available which was not available at the time of permit issuance (other than revised regulations, guidance, or test methods) and which would have justified the application of a less stringent effluent limitation at the time of permit issuance.

   As described further in section IV.C.3.b of this Fact Sheet, updated information that was not available at the time Order R5-2007-0014 was issued indicates that aluminum, nickel, manganese, and persistent chlorinated hydrocarbon pesticides do not exhibit reasonable potential to cause or contribute to an exceedance of water quality objectives in the receiving water. As described in section IV.B.2 of this Fact Sheet, this Order discontinues technology-based effluent limitations for VOCs that were not detected in the influent groundwater or effluent in detectable concentrations. The updated information that supports the relaxation of effluent limitations for these constituents includes the following:

[1] "*The exceptions in Section 303(d)(4) address both waters in attainment with water quality standards and those not in attainment, i.e. waters on the section 303(d) impaired waters list.*" See *In the Matter of the Petition of the Environmental Law Foundation*, WQO 2008-0006 at p. 4.

Aluminum. Receiving water monitoring data from the most recent 3 years for pH and hardness, as well as a WER study conducted on a similar water body (i.e., Auburn Ravine) in November 2010 indicates that the chronic criterion of 87 µg/L recommended in USEPA's National Ambient Water Quality Criteria for aluminum is overly stringent. Effluent and receiving water monitoring data from the most recent 3 years for aluminum indicates that the discharge does not exhibit reasonable potential to cause or contribute to an exceedance of the Secondary MCL of 200 µg/L or the acute criterion of 750 µg/L.

Nickel. Effluent and receiving water monitoring data from the most recent 3 years for nickel indicates that the discharge does not exhibit reasonable potential to cause or contribute to an exceedance of the CTR aquatic life criteria.

Manganese. The Discharger implemented new source control and maintenance procedures during the permit term that resulted in reduced manganese concentrations in the discharge. Effluent monitoring data collected since source reduction techniques have been implemented (completed December 2010) indicates that the discharge does not exhibit reasonable potential to cause or contribute to an exceedance of the Secondary MCL of 50 µg/L.

Persistent Chlorinated Hydrocarbon Pesticides. Effluent and receiving water monitoring data from the most recent 3 years for persistent chlorinated hydrocarbon pesticides indicates that the discharge does not exhibit reasonable potential to cause or contribute to an exceedance of the Basin Plan objective.

VOCs of Concern. As described in section IV.B.2 of this Fact Sheet, this Order only establishes effluent limitations for VOCs of concern, including vinyl chloride, tetrachloroethylene, trichloroethylene, trans-1,2-dichloroethylene, 1,1 dichloroethane, dichlorodifluoromethane, trichlorofluoromethane, methylene chloride, chloroform, and cis-1,2-dichloroethylene. Based on updated information that was not available at the time Order R5-2007-0014 was adopted, no other VOCs listed in Attachment I were detected in the influent groundwater or effluent in detectable concentrations or exhibit reasonable potential to cause or contribute to an exceedance of water quality objectives in the receiving water. Thus, only effluent limitations for vinyl chloride, tetrachloroethylene, trichloroethylene, trans-1,2-dichloroethylene, 1,1-dichloroethane, dichlorodifluoromethane, trichlorofluoromethane, methylene chloride, chloroform, and cis-1,2-dichloroethylene are retained in this Order. Since adoption of the previous permit the Discharger has monitored the influent and effluent for VOCs. The new data indicates the VOCs are not present.

Thus, removal of the effluent limitations for aluminum, nickel, manganese, persistent chlorinated hydrocarbon pesticides, and VOCs of concern from the previous permit is in accordance with CWA section 402(o)(2)(B)(i), which allows for the removal of effluent limitations based on information that was not available at the time of permit issuance.

4. Satisfaction of Antidegradation Policy

This Order does not allow for an increase in flow or mass of pollutants to the receiving water. Therefore, a complete antidegradation analysis is not necessary. The Order requires compliance with applicable federal technology-based standards and with WQBELs where the discharge could have the reasonable potential to

cause or contribute to an exceedance of water quality standards. The permitted discharge is consistent with the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution No. 68-16. Compliance with these requirements will result in the use of best practicable treatment or control of the discharge. The impact on existing water quality will be insignificant.

This Order removes existing effluent limitations for constituents in which updated monitoring data demonstrates that the effluent does not cause or contribute to an exceedance of the applicable water quality criteria or objectives in the receiving water. The Central Valley Water Board finds that the removal of the effluent limitations does not result in an allowed increase in pollutants or any additional degradation of the receiving water. Thus, the removal of effluent limitations is consistent with the the antidegradation provisions of 40 CFR 131.12 and State Water Board Resolution No. 68-16.

5. Stringency of Requirements for Individual Pollutants

This Order contains both technology-based effluent limitations and WQBELs for individual pollutants. The technology-based effluent limitations consist of restrictions on flow and VOCs. The WQBELs consist of restrictions on chlorine residual, pH, and TDS. This Order's technology-based pollutant restrictions implement the minimum, applicable federal technology-based requirements

WQBELs have been scientifically derived to implement water quality objectives that protect beneficial uses. Both the beneficial uses and the water quality objectives have been approved pursuant to federal law and are the applicable federal water quality standards. To the extent that toxic pollutant WQBELs were derived from the CTR, the CTR is the applicable standard pursuant to 40 CFR 131.38. The scientific procedures for calculating the individual WQBELs for priority pollutants are based on the CTR-SIP, which was approved by USEPA on 18 May 2000. All beneficial uses and water quality objectives contained in the Basin Plan were approved under state law and submitted to and approved by USEPA prior to 30 May 2000. Any water quality objectives and beneficial uses submitted to USEPA prior to 30 May 2000, but not approved by USEPA before that date, are nonetheless "applicable water quality standards for purposes of the CWA" pursuant to 40 CFR 131.21(c)(1). Collectively, this Order's restrictions on individual pollutants are no more stringent than required to implement the requirements of the CWA.

Summary of Final Effluent Limitations
Discharge Point No. 001

Table F-13. Summary of Final Effluent Limitations

Parameter	Units	Effluent Limitations				Basis[1]
		Average Monthly	Maximum Daily	Instantaneous Minimum	Instantaneous Maximum	
Flow	MGD	2.17	--	--	--	DC
pH	standard units	--	--	6.5	8.5	BP

Chlorine, Total Residual	mg/L	0.011[2]	0.019[3]	--	--	NAWQC
Total Dissolved Solids	mg/L	367	--	--	--	PB
Volatile Organic Compounds[4]	µg/L	--	0.5	--	--	ML

[1] DC – Based on the design capacity of the Facility.
BP – Based on water quality objectives contained in the Basin Plan.
NAWQC – Based on USEPA's National Ambient Water Quality Criteria for the protection of freshwater aquatic life.
PB – Based on the groundwater treatment plant performance.
ML – Based on the technical capability of the groundwater treatment system to dependably remove the groundwater contaminants to concentrations that are non-detectable by current analytical technology.

[2] Applied as a 4-day average effluent limitation.

[3] Applied as a 1-hour average effluent limitation.

[4] Effluent limitations apply to VOCs identified as constituents of concern in influent groundwater, including: vinyl chloride, tetrachloroethylene, trichloroethylene, trans-1,2-dichloroethylene, 1,1-dichloroethane, dichlorodifluoromethane, trichlorofluoromethane, methylene chloride, chloroform, and cis-1,2-dichloroethylene.

E. Interim Effluent Limitations – Not Applicable

F. Land Discharge Specifications

1. Discharge from the groundwater treatment system to the sedimentation basin shall be conducted only during well and groundwater treatment system maintenance events and in case of emergency. This requirement is necessary to protect receiving waters from discharges of untreated or partially treated groundwater from such maintenance events or emergencies. This land discharge specification is retained from Order R5-2007-0014.

2. In order to protect receiving waters from overflow of untreated or partially treated groundwater, this specification requires that sedimentation basins be designed, constructed, operated, and maintained to prevent inundation or washout from 100-year, 24-hour storm events. This land discharge specification is retained from Order R5-2007-0014.

3. The sedimentation basin shall be managed to prevent breeding of mosquitoes to protect human health and prevent a nuisance condition. Dead algae, vegetation, and debris create a large amount of organic material. Bacteria and fungi use oxygen to break down this organic material and cause the biological oxygen demand within the system to increase, thus lowering the availability of dissolved oxygen in the water. Dead algae, vegetation, and debris shall not accumulate on the water surface to minimize objectionable odor and maintain dissolved oxygen levels. This land discharge specification is retained from Order R5-2007-0014.

4. Order R5-2007-0014 established a total chlorine residual limitation of 4.0 mg/L for discharges to the sedimentation basin based on USEPA's proposed Stage 1 Disinfectant and Disinfection Byproduct Rule. The proposed limitation is intended to control the potential formation of disinfection byproducts such as trihalomethanes.

The limit is also intended to allow the Discharger time to adjust the dechlorination process to meet the demand of chlorine levels entering the treatment system. The operators will be adjusting the addition of dechlorination chemicals in order to reduce the chlorine residual to an acceptable level for eventual discharge to Deer Creek. This land discharge specification is retained from Order R5-2007-0014.

5. Prior to discharging to the sedimentation basin, the Discharger shall demonstrate that discharges to the sedimentation basin, at the limitations prescribed in the Order, will not degrade groundwater quality. Order R5-2007-0014 established an MDEL of 1,000 mg/L and an annual average effluent limitation of 450 mg/L for TDS in discharges to the sedimentation basin following extraction well and tower maintenance events. The MDEL has been set in order to minimize mineralization to protect groundwater while allowing for variability in operating the dechlorination system. The annual average limitation is protective of agricultural uses. However, due to the intermittent nature of discharges, the periodic cleanout of the basin sediments, and dilution with stormwater discharges to the ponds, the TDS limitation is not expected to cause an increase in background concentrations in groundwater. This land discharge specification is retained from Order R5-2007-0014.

6. The following table summarizes the effluent limitations for discharges to the sedimentation basin, Discharge Point No. 002.

Table F-14. Summary of Effluent Limits for Discharges to Sedimentation Basin

Parameter	Units	Effluent Limitations	
		Maximum Daily	Annual Average
Total Dissolved Solids	mg/L	1,000	450
Chlorine, Total Residual	mg/L	4.0	--

G. Reclamation Specifications – Not Applicable

V. RATIONALE FOR RECEIVING WATER LIMITATIONS

Basin Plan water quality objectives to protect the beneficial uses of surface water and groundwater include numeric objectives and narrative objectives, including objectives for chemical constituents, toxicity, and tastes and odors. The toxicity objective requires that surface water and groundwater be maintained free of toxic substances in concentrations that produce detrimental physiological responses in humans, plants, animals, or aquatic life. The chemical constituent objective requires that surface water and groundwater shall not contain chemical constituents in concentrations that adversely affect any beneficial use or that exceed the MCLs in Title 22, CCR. The tastes and odors objective states that surface water and groundwater shall not contain taste- or odor-producing substances in concentrations that cause nuisance or adversely affect beneficial uses. The Basin Plan requires the application of the most stringent objective necessary to ensure that surface water and groundwater do not contain chemical constituents, toxic substances, radionuclides, or taste and odor producing substances in concentrations that adversely affect domestic drinking water supply, agricultural supply, or any other beneficial uses.

A. Surface Water

1. CWA section 303(a-c), requires states to adopt water quality standards, including criteria where they are necessary to protect beneficial uses. The Central Valley Water Board adopted water quality criteria as water quality objectives in the Basin Plan. The Basin Plan states that "[t]*he numerical and narrative water quality objectives define the least stringent standards that the Regional Water Board will apply to regional waters in order to protect the beneficial uses.*" The Basin Plan includes numeric and narrative water quality objectives for various beneficial uses and water bodies. This Order contains receiving surface water limitations based on the Basin Plan numerical and narrative water quality objectives for biostimulatory substances, chemical constituents, discoloration, dissolved oxygen, floating material, oil and grease, pH, pesticides, radioactivity, suspended sediment, settleable substances, suspended material, tastes and odors, temperature, toxicity, and turbidity.

   a. **Temperature.** The Central Valley Water Board adopted the Site-Specific Temperature Objective for Deer Creek in El Dorado and Sacramento Counties, Resolution R5-2005-0119, on 16 September 2005. The Basin Plan amendment was approved by the State Water Board, the Office of Administrative Law, and USEPA and became effective on 17 May 2006. The Basin Plan was amended to include a site specific temperature objective for Deer Creek, which states, "*For Deer Creek, source to Cosumnes River, temperature changes due to controllable factors shall not cause creek temperatures to exceed the objectives specified in Table III-4A*." The objectives contained in Table III-4A are included in the following table.

Table F-15. Receiving Water Limitations for Temperature

Date	Daily Maximum[1]	Monthly Average[2]
	°F	°F
January and February	63	58
March	65	60
April	71	64
May	77	68
June	81	74
July through September	81	77
October	77	72
November	73	65
December	65	58

[1] Maximum not to be exceeded.
[2] Defined as a calendar month average.

The objectives contained in Table III-4A of the Basin Plan are included in this Order as receiving water limitations.

b. **Turbidity.** The Central Valley Water Board adopted the Site-Specific Water Quality Objectives for pH and Turbidity for Deer Creek in El Dorado and Sacramento Counties, Resolution R5-2002-0127, on 19 July 2002. The Basin Plan amendment was approved by the State Water Board, the Office of Administrative Law, and USEPA and became effective on 21 October 2003. The Basin Plan was amended to include a site specific turbidity objective for Deer Creek which states,

• *"When the dilution ratio for discharges is less than 20:1 and where natural turbidity is less than 1 Nephelometric Turbidity Unit (NTU), discharges shall not cause the receiving water daily average turbidity to exceed 2 NTUs or daily maximum turbidity to exceed 5 NTUs. Where natural turbidity is between 1 and 5 NTUs, dischargers shall not cause receiving water daily average turbidity to increase more than 1 NTU or daily maximum turbidity to exceed 5 NTUs "*

The Central Valley Water Board adopted Resolution R5-2005-0028 (Amendment No. 1) on 17 March 2005, which amended Order R5-2002-0127 to include receiving water limitations based on objectives set forth by the Basin Plan amendment. The site-specific objectives contained in the Basin Plan are included in this Order as receiving water limitations.

B. Groundwater

The Facility discharges to a sedimentation basin during maintenance of the extraction well network. The discharges may cause exceedances of water quality objectives in the groundwater. Groundwater limits are included to ensure the discharge does not cause the groundwater to include taste or odor-producing constituents, toxic substances, or any other constituents, in concentrations that cause nuisance or adversely affect beneficial uses; or include waste constituent concentrations in excess of water quality objectives or background water quality, whichever is greater.

VI. RATIONALE FOR MONITORING AND REPORTING REQUIREMENTS

40 CFR 122.48 requires that all NPDES permits specify requirements for recording and reporting monitoring results. Water Code sections 13267 and 13383 authorize the Regional Water Boards to require technical and monitoring reports. The Monitoring and Reporting Program (Attachment E) of this Order, establishes monitoring and reporting requirements to implement federal and state requirements. The following provides the rationale for the monitoring and reporting requirements contained in the Monitoring and Reporting Program for the Facility.

A. Influent Monitoring – Not Applicable

B. Effluent Monitoring

1. Pursuant to the requirements of 40 CFR 122.44(i)(2) effluent monitoring is required for all constituents with effluent limitations. Effluent monitoring is necessary to assess compliance with effluent limitations, assess the effectiveness of the treatment process, and to assess the impacts of the discharge on the receiving stream and groundwater.

2. Effluent monitoring frequencies and sample types for flow (continuous), dissolved oxygen (weekly), electrical conductivity (weekly), pH (weekly), chlorine residual (weekly or continuous), TDS (weekly), temperature (weekly), and turbidity (weekly) have been retained from Order R5-2007-0014 to determine compliance with effluent limitations, where applicable, and characterize the effluent.

3. Monitoring data collected over the term of Order R5-2007-0014 for selenium is insufficient to determine if the discharge has reasonable potential to cause or contribute to an exceedance of applicable water quality criteria. Therefore, this Order requires monthly effluent monitoring for selenium for 1 year to determine if selenium is present in the discharge at concentrations that will cause reasonable potential.

4. Monitoring data collected over the term of Order R5-2007-0014 for aluminum, fluoride, nickel, and persistent chlorinated hydrocarbon pesticides did not demonstrate reasonable potential to exceed water quality objectives/criteria. Thus, specific monitoring requirements for these parameters have not been retained from Order R5-2007-0014.

5. Order R5-2007-0014 established quarterly monitoring for manganese. Manganese is a naturally occurring element in most subsoil environments and discharge from the Facility may contain elevated concentrations of manganese if proper operation and maintenance of the Facility is not provided. Therefore, this Order retains quarterly monitoring for manganese to verify that manganese is not discharged at concentrations that will cause or contribute to an exceedance of water quality objectives.

6. Order R5-2007-0014 established quarterly monitoring for hardness. This Order revises the monitoring frequency for hardness from quarterly to monthly to ensure

that adequate data is available to properly adjust water quality criteria for hardness-based metals.

7. Order R5-2007-0014 included weekly monitoring requirements for all VOCs listed in EPA Method 502.2. The Discharger's CAO and extensive VOC monitoring of the influent groundwater indicates that the VOCs of concern in the influent groundwater include vinyl chloride, tetrachloroethylene, trichloroethylene, trans-1,2-dichloroethylene, 1,1-dichloroethane, dichlorodifluoromethane, trichlorofluoromethane, methylene chloride, chloroform, and cis-1,2-dichloroethylene. Therefore, this Order establishes MDELs for these constituents and discontinues effluent limitations for the remaining VOCs. This Order requires monthly monitoring for the VOCs of concern in order to determine compliance with the applicable effluent limitations and reduces the monitoring frequency from weekly to annually for all other VOCs listed in Attachment I to characterize the effluent discharged for future permit renewals.

8. Priority pollutant data for the effluent has been provided by the Discharger over the term of Order R5-2007-0014 and was used to conduct a meaningful RPA. In accordance with Section 1.3 of the SIP, periodic monitoring for priority pollutants for which criteria or objectives apply and for which no effluent limitations have been established is required. Consistent with Order R5-2007-0014, this Order requires monitoring twice during the third or fourth year following the date of permit adoption at Discharge Point No. 001 in order to collect data to conduct an RPA for the next permit renewal. See Attachment H for more detailed requirements related to performing priority pollutant monitoring.

9. Water Code section 13176, subdivision (a), states: "*The analysis of any material required by [Water Code sections 13000-16104] shall be performed by a laboratory that has accreditation or certification to Article 3 (commencing with Section 100825) of Chapter 4 of Part 1 of Division 101 of the Health and Safety Code.*" DPH certifies laboratories through its Environmental Laboratory Accreditation Program (ELAP).

Section 13176 cannot be interpreted in a manner that would violate federal holding time requirements that apply to NPDES permits pursuant to the CWA. (Water Code §§ 13370, subd. (c), 13372, 13377.) Section 13176 is inapplicable to NPDES permits to the extent it is inconsistent with CWQ requirements. (Water Code § 13372, subd. (a).) The holding time requirements are 15 minutes for chlorine residual, dissolved oxygen, and pH, and immediate analysis is required for temperature. (40 C.F.R. § 136.3(e), Table II) Due to the location of the Facility, it is both legally and factually impossible for the Discharger to comply with section 13176 for constituents with short holding times.

C. Whole Effluent Toxicity Testing Requirements

1. **Acute Toxicity.** Consistent with Order R5-2007-0014, quarterly 96-hour bioassay testing is required to demonstrate compliance with the effluent limitation for acute toxicity.

2. **Chronic Toxicity.** Consistent with Order R5-2007-0014, quarterly chronic whole effluent toxicity testing is required in order to demonstrate compliance with the Basin Plan's narrative toxicity objective.

D. Receiving Water Monitoring

1. Surface Water

a. Receiving water monitoring is necessary to assess compliance with receiving water limitations and to assess the impacts of the discharge on the receiving stream.

b. Monitoring Locations RSW-001 and RSW-002

i. Receiving water monitoring frequencies and sample types for dissolved oxygen (monthly), electrical conductivity (monthly), flow (monthly), hardness (monthly), pH (monthly), temperature (monthly), and turbidity (monthly) have been retained from Order R5-2007-0014.

ii. Priority pollutant data for the receiving water has been provided by the Discharger over the term of Order R5-2007-0014, and was used to conduct a meaningful RPA. In accordance with Section 1.3 of the SIP, periodic monitoring for priority pollutants for which criteria or objectives apply and for which no effluent limitations have been established. Consistent with Order R5-2007-0014, this Order requires monitoring for priority pollutants and other pollutants of concern twice during the third or fourth year following the adoption of the permit, performed concurrently with effluent monitoring, in order to collect data to conduct an RPA for the next permit renewal. See Attachment H for more detailed requirements related to performing priority pollutant monitoring.

2. Groundwater – Not Applicable

E. Other Monitoring Requirements

1. Land Discharge Monitoring

Except for some metals, monitoring requirements at Monitoring Location EFF-002 for discharges to the sedimentation basin are retained from Order R5-2007-0014 to determine compliance with land discharge specifications at Discharge Point No. 002. Order R5-2007-0014 required monitoring for a list of Title 22 metals. Metals that have been consistently below applicable water quality objectives are no longer required to be monitored.

2. Effluent and Receiving Water Characterization Study

An effluent and receiving water monitoring study is required to ensure adequate information is available for the next permit renewal. Twice during the third or fourth year following the date of permit adoption, the Discharger is required to conduct monitoring of the effluent at Monitoring Location EFF-001 and of the receiving water at Monitoring Location RSW-001 for all priority pollutants and other constituents of concern as described in Attachment H. Monitoring is to be conducted once during wet weather (i.e., December through February) and once during dry weather (i.e., July through September).

VII. RATIONALE FOR PROVISIONS

A. Standard Provisions

Standard Provisions, which apply to all NPDES permits in accordance with 40 CFR 122.41, and additional conditions applicable to specified categories of permits in accordance with 40 CFR 122.42, are provided in Attachment D. The Discharger must comply with all standard provisions and with those additional conditions that are applicable under 40 CFR 122.42.

40 CFR 122.41(a)(1) and (b) through (n) establish conditions that apply to all State-issued NPDES permits. These conditions must be incorporated into the permits either expressly or by reference. If incorporated by reference, a specific citation to the regulations must be included in the Order. 40 CFR 123.25(a)(12) allows the state to omit or modify conditions to impose more stringent requirements. In accordance with 40 CFR 123.25, this Order omits federal conditions that address enforcement authority specified in 40 CFR 122.41(j)(5) and (k)(2) because the enforcement authority under the Water Code is more stringent. In lieu of these conditions, this Order incorporates by reference Water Code section 13387(e).

B. Special Provisions

1. Reopener Provisions

a. **Whole Effluent Toxicity.** This Order requires the Discharger to investigate the causes of, and identify corrective actions to reduce or eliminate effluent toxicity through a Toxicity Reduction Evaluation (TRE). This Order may be reopened to include a numeric chronic toxicity limitation, a new acute toxicity limitation, and/or

a limitation for a specific toxicant identified in the TRE. Additionally, if a numeric chronic toxicity water quality objective is adopted by the State Water Board, this Order may be reopened to include a numeric chronic toxicity limitation based on that objective.

b. **Water Effects Ratio (WER) and Metal Translators.** A default WER of 1.0 has been used in this Order for calculating CTR criteria for applicable priority and non-priority pollutant inorganic constituents. In addition, default dissolved-to-total metal translators have been used to convert water quality objectives from dissolved to total recoverable when developing criteria for select metals. If the Discharger performs studies to determine site-specific WERs and/or site-specific dissolved-to-total metal translators, this Order may be reopened to modify the effluent limitations for the applicable inorganic constituents.

c. **Constituent Study.** There are indications that the discharge may contain selenium in concentrations that have a reasonable potential to cause or contribute to an exceedance of water quality objectives. This Order requires the Discharger to complete a study to determine the presence of selenium concentration in the effluent. This reopener provision allows the Central Valley Water Board to reopen this Order for addition of effluent limitations and requirements for selenium if after review of the study results it is determined that the discharge has reasonable potential to cause or contribute to an exceedance of a water quality objective.

d. **Compliance Schedule for Exemption to Title 27.** As described in section III.E.1 of this Fact Sheet, there is insufficient information to determine if the discharge meets the conditions for an exemption to Title 27 requirements. This Order includes a compliance schedule for the Discharger to comply with Title 27. The Discharger shall conduct a groundwater study to determine if the discharges to groundwater from the sedimentation basin are in compliance with the Basin Plan and thus would meet one of the exemptions for Title 27. If, after review of a groundwater study, it is determined that discharges to groundwater from the sedimentation basin are not in compliance with the Basin Plan, the Discharger must submit a workplan and schedule for complying with Title 27. Based on the results of the workplan this Order may be reopened to modify the final compliance date.

2. **Special Studies and Additional Monitoring Requirements**

a. **Chronic Whole Effluent Toxicity Requirements.** The Basin Plan contains a narrative toxicity objective that states, "*All waters shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.*" (Basin Plan at page III-8.00). Based on whole effluent chronic toxicity testing performed by the Discharger from November 2008 and October 2011, the discharge has reasonable potential to cause or contribute to an in-stream excursion above of the Basin Plan's narrative toxicity objective.

This provision provides a numeric toxicity monitoring trigger and requirements for accelerated monitoring, as well as, requirements for TRE initiation if toxicity has been demonstrated.

Monitoring Trigger. A numeric toxicity monitoring trigger of > 1 TUc (where TUc = 100/NOEC) is applied in the provision, because this Order does not allow any dilution for the chronic condition. Therefore, a TRE is triggered when the effluent exhibits toxicity at 100% effluent.

Accelerated Monitoring. The provision requires accelerated WET testing when a regular WET test result exceeds the monitoring trigger. The purpose of accelerated monitoring is to determine, in an expedient manner, whether there is toxicity before requiring the implementation of a TRE. Due to possible seasonality of the toxicity, the accelerated monitoring should be performed in a timely manner, preferably taking no more than 2 to 3 months to complete.

The provision requires accelerated monitoring consisting of four chronic toxicity tests in a six-week period (i.e., one test every two weeks) using the species that exhibited toxicity. Guidance regarding accelerated monitoring and TRE initiation is provided in the *Technical Support Document for Water Quality-based Toxics Control,* EPA/505/2-90-001, March 1991 (TSD). The TSD at page 118 states, "*EPA recommends if toxicity is repeatedly or periodically present at levels above effluent limits more than 20 percent of the time, a TRE should be required.*" Therefore, four accelerated monitoring tests are required in this provision. If no toxicity is demonstrated in the four accelerated tests, then it demonstrates that toxicity is not present at levels above the monitoring trigger more than 20 percent of the time (only 1 of 5 tests are toxic, including the initial test). However, notwithstanding the accelerated monitoring results, if there is adequate evidence of effluent toxicity (i.e. toxicity present exceeding the monitoring trigger more than 20 percent of the time), the Executive Officer may require that the Discharger initiate a TRE.

See the WET Accelerated Monitoring Flow Chart (Figure F-1), below, for further clarification of the accelerated monitoring requirements and for the decision points for determining the need for TRE initiation.

TRE Guidance. The Discharger is required to prepare a TRE Workplan in accordance with USEPA guidance. Numerous guidance documents are available, as identified below:

- Toxicity Reduction Evaluation Guidance for Municipal Wastewater Treatment Plants, EPA/833-B-99/002, August 1999.
- Generalized Methodology for Conducting Industrial Toxicity Reduction Evaluations (TREs), EPA/600/2-88/070, April 1989.
- Methods for Aquatic Toxicity Identification Evaluations: Phase I Toxicity Characterization Procedures, Second Edition, EPA 600/6-91/003, February 1991.

- Toxicity Identification Evaluation: Characterization of Chronically Toxic Effluents, Phase I, EPA/600/6-91/005F, May 1992.

- Methods for Aquatic Toxicity Identification Evaluations: Phase II Toxicity Identification Procedures for Samples Exhibiting Acute and Chronic Toxicity, Second Edition, EPA/600/R-92/080, September 1993.

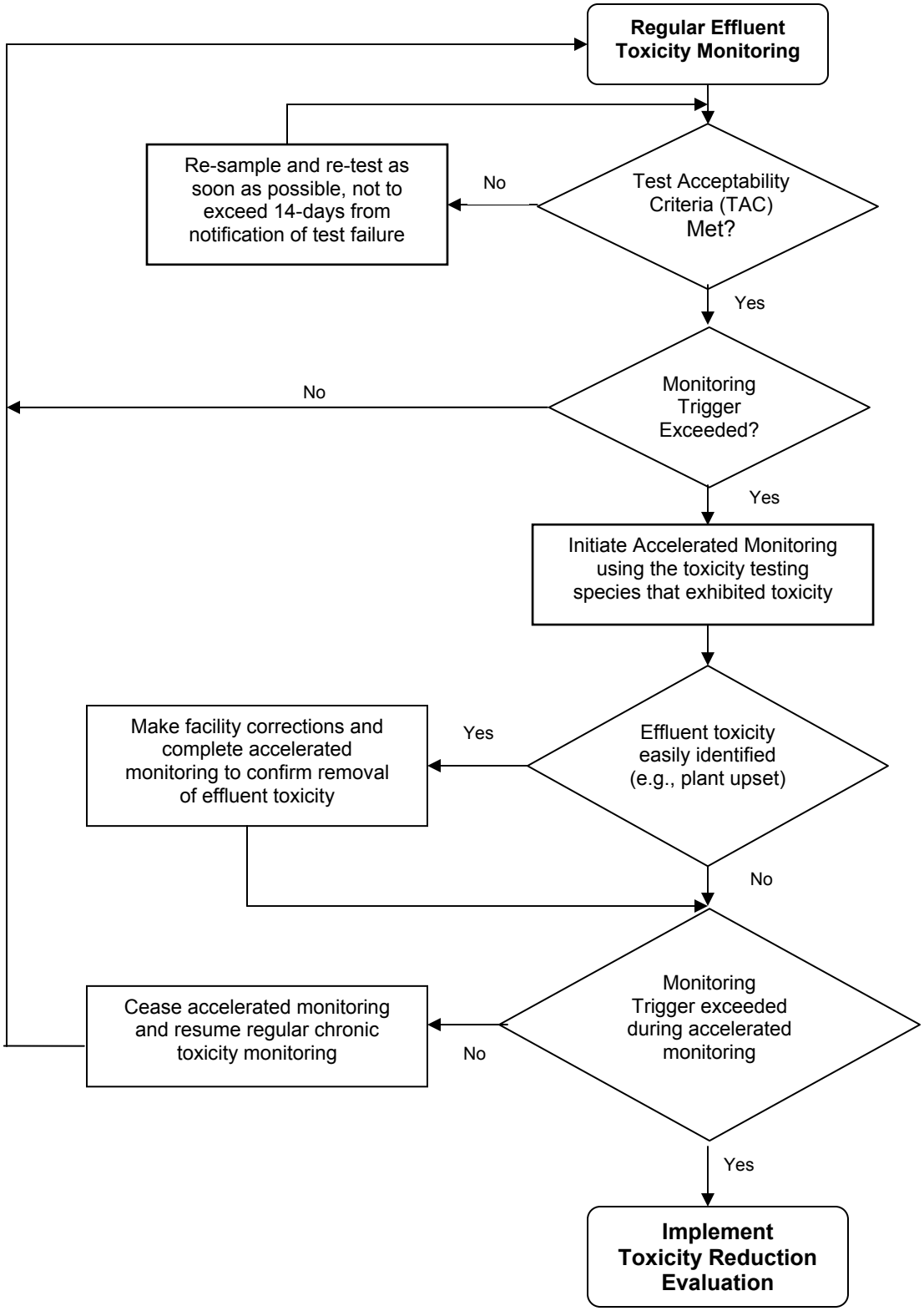
- Methods for Aquatic Toxicity Identification Evaluations: Phase III Toxicity Confirmation Procedures for Samples Exhibiting Acute and Chronic Toxicity, Second Edition, EPA 600/R-92/081, September 1993.

- Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, Fifth Edition, EPA-821-R-02-012, October 2002.

- Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition, EPA-821-R-02-013, October 2002.

- Technical Support Document for Water Quality-based Toxics Control, EPA/505/2-90-001, March 1991.

Figure F-1
WET Accelerated Monitoring Flow Chart



b. **Constituent Study.** There are indications that the discharge may contain selenium at concentrations that have a reasonable potential to cause or contribute to an exceedance of water quality objectives, as described further in section IV.C.3.c of this Fact Sheet. This Order requires the Discharger to complete a study to determine the presence selenium in the effluent. If after a review of the study results it is determined that the discharge has reasonable potential to cause or contribute to an exceedance of a water quality objective, the Discharger is required to immediately develop a work plan and treatment feasibility study to control selenium. In addition, a reopener provision allows this Order to be reopened to add new effluent limitations for selenium. The Discharger is currently conducting a Groundwater Extraction Optimization study to optimize the operation of the groundwater extraction well field. During the Optimization study the Discharger will evaluate if wells can be eliminated. The monitoring for selenium should begin after completion of the Optimization study to ensure the samples are representative of the discharge. The Optimization study is scheduled for completion in the first or second quarter of 2013. Therefore, the constituent study is required to begin by 1 July 2013.

3. **Best Management Practices and Pollution Prevention**

a. **Salinity Evaluation and Minimization Plan.** An Evaluation and Minimization Plan for salinity is required in this Order to ensure adequate measures are developed and implemented by the Discharger to reduce the discharge of salinity to Deer Creek. Order R5-2007-0014 contained a provision requiring the Discharger to "*use the best practicable treatment or control technique currently available to limit mineralization to no more than a reasonable increment*." This requirement is not retained in this Order, however the development and implementation of a salinity evaluation and minimization plan should also ensure that mineralization is minimized.

4. **Construction, Operation, and Maintenance Specifications**

a. **Operation and Maintenance Program.** The Discharger has experienced fouling of extraction wells from iron bacteria in the groundwater causing a decline in the pumping capacity of the system. The Discharger must periodically treat the extraction wells for the iron bacteria and also conduct periodic well rehabilitation to maintain pumping efficiency. Additionally, mineral build up can reduce the efficiency of the air stripping towers to remove VOCs from the groundwater. Tower maintenance through periodic acid washes is conducted to remove mineral build up on the packing material in the stripper towers.

The Discharger implemented source control and maintenance procedures to control effluent manganese concentrations during the term of the permit, which include 1) air sparging for extraction wells determined to contribute the majority of manganese; 2) regular pipeline flushes to the sedimentation basin to preclude loose manganese solids from reaching Deer Creek; and 3) installation of a pipeline shutoff valve to manage discharges into the sedimentation basin following system shutdowns and during flushing events.

The Discharger is currently operating under the *Operation and Maintenance Program and Standard Operating Procedures for the Kiefer Treatment Plant* (O&M Program) that was last updated in 2006. This Order requires the Discharger to update and maintain the O&M Program for discharges of treated groundwater to Deer Creek and the on-site sedimentation basin. The updated O&M Program shall describe, at a minimum, management of discharges to the sedimentation basin, methods for complying with the requirements and limitations in this Order (including source control and maintenance procedures for controlling manganese), and maintenance and rehabilitation activities for the extraction wells and towers. Any changes to the O&M program thereafter must be submitted to the Central Valley Water Board.

5. Special Provisions for Municipal Facilities (POTWs Only) – Not Applicable

6. Other Special Provisions

a. Consistent with Order R5-2007-0014, this Order requires that the Discharger may use treated groundwater for dust control at the landfill in accordance with a plan that has been submitted to the Executive Officer.

b. Consistent with Order R5-2007-0014 and an agreement with the California Department of Fish and Game, this Order requires the Discharger to maintain a constant and uninterrupted flow of 0.18 MGD when discharging from Discharge Point No. 001 to Deer Creek, except for during repair or maintenance of the system or in the event of unusual or emergency circumstances.

7. Compliance Schedules

a. Compliance Schedule for Exemption to Title 27. The discharges to the sedimentation may be exempt from Title 27 in accordance with Title 27, Section 20090(b) of the California Code of Regulations (i.e., the *wastewater exemption*). The wastewater exemption is a conditional exemption and can only be applied if the Discharger can demonstrate that (1) the discharge is in compliance with the Basin Plan, and (2) the treated groundwater does not need to be managed has a hazardous waste. Based on the effluent data to the sedimentation basin, the Central Valley Water Board finds that the treated groundwater does not need to be managed as a hazardous waste. However, there is insufficient information to determine if the discharges to the sedimentation are in compliance with the Basin Plan.

Discharges of manganese to the sedimentation basin exceed water quality objectives and there is insufficient groundwater data to determine if these discharges are causing exceedances of the Basin Plan's water quality objectives in the groundwater. Therefore, the wastewater exemption cannot be applied at this time. To determine if discharges to the sedimentation basin are exempt from requirements in Title 27, this Order requires the Discharger to perform a groundwater study to determine if the groundwater underlying the sedimentation basin is in compliance with the Basin Plan.

The Discharger shall perform the study in accordance section VI.C.7 of this Order. The Central Valley Water Board will evaluate the groundwater study and reopen the permit, as necessary, to require additional measures to ensure compliance with Title 27 if the results of the study indicate that the discharges to groundwater are not in compliance with the Basin Plan and do not meet the conditions for an exemption to Title 27 requirements. Full compliance with the Title 27 requirements is required by **1 December 2019**.

VIII. PUBLIC PARTICIPATION

The Central Valley Water Board is considering the issuance of WDRs that will serve as an NPDES permit for the Facility. As a step in the WDR adoption process, the Central Valley Water Board staff has developed tentative WDRs. The Central Valley Water Board encourages public participation in the WDR adoption process.

A. Notification of Interested Parties

The Central Valley Water Board has notified the Discharger and interested agencies and persons of its intent to prescribe waste discharge requirements for the discharge and has provided them with an opportunity to submit their written comments and recommendations. Notification was provided through the posting of a Notice of Public Hearing at the Facility, via an email sent to interested parties, and through posting on the Central Valley Water Board's internet website.

B. Written Comments

The staff determinations are tentative. Interested persons are invited to submit written comments concerning these tentative WDRs. Comments must be submitted either in person or by mail to the Executive Office at the Central Valley Water Board at the address above on the cover page of this Order.

To be fully responded to by staff and considered by the Central Valley Water Board, written comments must be received at the Central Valley Water Board offices by 5:00 p.m. on **<DATE>**.

C. Public Hearing

The Central Valley Water Board will hold a public hearing on the tentative WDRs during its regular Board meeting on the following date and time and at the following location:

Date: 31 January/1 February 2013
Time: 8:30 a.m.
Location: Regional Water Quality Control Board, Central Valley Region
11020 Sun Center Dr., Suite #200
Rancho Cordova, CA 95670

Interested persons are invited to attend. At the public hearing, the Central Valley Water Board will hear testimony, if any, pertinent to the discharge, WDRs, and permit. Oral testimony will be heard; however, for accuracy of the record, important testimony should be in writing.

Please be aware that dates and venues may change. Our Web address is www.waterboards.ca.gov/centralvalley where you can access the current agenda for changes in dates and locations.

D. Waste Discharge Requirements Petitions

Any aggrieved person may petition the State Water Board to review the decision of the Central Valley Water Board regarding the final WDRs. The petition must be received by the State Water Board within 30 days of the Central Valley Water Board's action, and must be submitted to the following address:

State Water Resources Control Board
Office of Chief Counsel
P.O. Box 100, 1001 I Street
Sacramento, CA 95812-0100

E. Information and Copying

The Report of Waste Discharge, related documents, tentative effluent limitations and special provisions, comments received, and other information are on file and may be inspected at the address above at any time between 8:30 a.m. and 4:45 p.m., Monday through Friday. Copying of documents may be arranged through the Central Valley Water Board by calling (916) 464-3291.

F. Register of Interested Persons

Any person interested in being placed on the mailing list for information regarding the WDRs and NPDES permit should contact the Central Valley Water Board, reference this Facility, and provide a name, address, and phone number.

G. Additional Information

Requests for additional information or questions regarding this order should be directed to Kari Holmes at (916) 464-4843.

ATTACHMENT G – SUMMARY OF REASONABLE POTENTIAL ANALYSIS FOR CONSTITUENTS OF CONCERN

Constituent	Units	MEC	B	C	CMC	CCC	Water & Org	Org. Only	Basin Plan	MCL	Reasonable Potential
Aluminum, Total Recoverable	µg/L	103	70	200	750[1]	750	--	--	--	200	No
Arsenic, Total Recoverable	µg/L	1.3	0.60	10	340	150	--	--	--	10	No
Barium, Total Recoverable	µg/L	98	52	1,000	--	--	1,000	--	--	1,000	No
Bis (2-Ethylhexyl) Phthalate	µg/L	No Data	5.4	1.8	--	--	1.8	5.9	--	4	No
Chloroform	µg/L	0.08	0.12	80	--	--	--	--	--	80[2]	No
Chromium, Total Recoverable	µg/L	1.1	<0.070	50	--	--	--	--	--	50	No
Chromium (VI), Total Recoverable	µg/L	No Data	0.01	11	16	11	--	--	--	--	No
cis-1,2-Dichloroethylene	µg/L	0.37	<0.12	6	--	--	--	--	--	6	No
Copper, Total Recoverable	µg/L	1.1	3.9	14[3]/5.0[4]	21[3]/7.0[4]	14[3]/5.0[4]	1,300	--	--	1,000	No
1,2-Dichlorobenzene	µg/L	0.22	<0.13	600	--	--	2,700	17,000	--	600	No
1,4-Dichlorobenzene	µg/L	0.22	<0.30	5	--	--	400	2,600	--	5	No
Di-n-butyl Phthalate	µg/L	No Data	1.3	2,700	--	--	2,700	12,000	--	--	No
Electrical Conductivity @ 25°C	µmhos/cm	425	636	700[5]	--	--	--	--	--	900	No
Fluoride, Total	mg/L	0.2	N/A	2	--	--	--	--	--	2	No
Hexachlorobutadiene	µg/L	0.47	<0.4	0.44	--	--	0.44	50	--	--	No
Iron, Total Recoverable	µg/L	56[6]	124[6]	300	--	--	--	--	--	300	No
Lead, Total Recoverable	µg/L	1.6	<0.3	4.8[3]/1.3[4]	122[3]/32[4]	4.8[3]/1.3[4]	--	--	--	15	No
Manganese, Total Recoverable	µg/L	20.3[6]	26.3[6]	50	--	--	100	--	--	50	No
Methyl Chloride	µg/L	0.22	0.14	No Criteria	--	--	--	--	--	--	No
Molybdenum, Total Recoverable	µg/L	2	N/A	10[5]	--	--	--	--	--	--	No
Naphthalene	µg/L	0.5	<0.17	No Criteria	--	--	--	--	--	--	No
Nickel, Total Recoverable	µg/L	1.3	2.9	75[3]/48[4]	676[3]/252[4]	75[3]/48[4]	610	4,600	--	100	No
Nitrate Nitrogen, Total (as N)	µg/L	No Data	1.2	10	--	--		--	--	10	No
Selenium, Total Recoverable	µg/L	Insuf. Data	<0.50	5	20	5	170	4,200	--	50	Insufficient Data[7]

Constituent	Units	MEC	B	C	CMC	CCC	Water & Org	Org. Only	Basin Plan	MCL	Reasonable Potential
Sulfate	µg/L	No Data	24[6]	250	--	--	--	--	--	250	No
Total Dissolved Solids	mg/L	277[6]	199[6]	500	--	--	--	--	--	500	No
Trichloroethylene	µg/L	0.3	<0.18	2.7	--	--	2.7	81	--	5	No
1,2,4-Trichlorobenzene	µg/L	0.42	<0.27	5	--	--	--	--	--	5	No
Zinc, Total Recoverable	µg/L	2.3	3.5	173[3]/64[4]	173[3]/64[4]	173[3]/64[4]	7,400	26,000	--	5,000	No

General Note: All inorganic concentrations are given as a total recoverable.
MEC = Maximum Effluent Concentration
B = Maximum Receiving Water Concentration or lowest detection level, if non-detect
C = Criterion used for Reasonable Potential Analysis
CMC = Criterion Maximum Concentration (CTR or NTR)
CCC = Criterion Continuous Concentration (CTR or NTR)
Water & Org = Human Health Criterion for Consumption of Water & Organisms (CTR or NTR)
Org. Only = Human Health Criterion for Consumption of Organisms Only (CTR or NTR)
Basin Plan = Numeric Site-specific Basin Plan Water Quality Objective
MCL = Drinking Water Standards Maximum Contaminant Level
NA = Not Available
ND = Non-detect

Footnotes:
(1) USEPA National Recommended Ambient Water Quality Criteria, Freshwater Aquatic Life Protection, 1-hour Average.
(2) Criterion applies to total trihalomethanes, which includes chloroform.
(3) Criterion to be compared to the maximum effluent concentration.
(4) Criterion to be compared to the maximum ambient background receiving water concentration
(5) Water Quality for Agriculture.
(6) Represents the maximum observed annual average concentration for comparison with the MCL.
(7) Insufficient data to conduct RPA. See section IV.C.3 of the Fact Sheet (Attachment F).

ATTACHMENT H – EFFLUENT AND RECEIVING WATER CHARACTERIZATION STUDY

I. Background. Sections 2.4.1 through 2.4.4 of the SIP provide minimum standards for analyses and reporting. (Copies of the SIP may be obtained from the State Water Resources Control Board, or downloaded from http://www.waterboards.ca.gov/iswp/index.html). To implement the SIP, effluent and receiving water data are needed for all priority pollutants. Effluent and receiving water pH and hardness are required to evaluate the toxicity of certain priority pollutants (such as heavy metals) where the toxicity of the constituents varies with pH and/or hardness. Section 3 of the SIP prescribes mandatory monitoring of dioxin congeners. In addition to specific requirements of the SIP, the Central Valley Water Board is requiring the following monitoring:

A. Drinking water constituents. Constituents for which drinking water Maximum Contaminant Levels (MCLs) have been prescribed in the California Code of Regulation are included in the *Water Quality Control Plan, Fourth Edition, for the Sacramento and San Joaquin River Basins* (Basin Plan). The Basin Plan defines virtually all surface waters within the Central Valley Region as having existing or potential beneficial uses for municipal and domestic supply. The Basin Plan further requires that, at a minimum, water designated for use as domestic or municipal supply shall not contain concentrations of chemical constituents in excess of the MCLs contained in the California Code of Regulations.

B. Effluent and receiving water temperature. This is both a concern for application of certain temperature-sensitive constituents, such as fluoride, and for compliance with the Basin Plan's thermal discharge requirements.

C. Effluent and receiving water hardness and pH. These are necessary because several of the CTR constituents are hardness and pH dependent.

II. Monitoring Requirements.

A. Twice Per Permit Term Monitoring. Twice during the third or fourth year following adoption of the permit, samples shall be collected from the effluent and upstream receiving water (Monitoring Locations EFF-001 and RSW-001) and analyzed for the constituents listed in Table H-1. The monitoring shall be conducted once during wet weather (i.e., December through February) and once during dry weather (i.e., July through September). Each individual monitoring event shall provide representative sample results for the effluent and upstream receiving water.

B. Concurrent Sampling. Effluent and receiving water sampling shall be performed at approximately the same time, on the same date.

C. Sample type. All effluent and receiving water samples shall be taken as grab samples.

D. Additional Monitoring/Reporting Requirements. The Discharger shall conduct the monitoring and reporting in accordance with the General Monitoring Provisions and Reporting Requirements in Attachment E.

Table H-1. Priority Pollutants and Other Constituents of Concern

CTR #	Constituent	CAS Number	Maximum Reporting Level[1] µg/L or noted
28	1,1-Dichloroethane	75343	1
30	1,1-Dichloroethene	75354	0.5
41	1,1,1-Trichloroethane	71556	2
42	1,1,2-Trichloroethane	79005	0.5
37	1,1,2,2-Tetrachloroethane	79345	0.5
75	1,2-Dichlorobenzene	95501	2
29	1,2-Dichloroethane	107062	0.5
	cis-1,2-Dichloroethylene	156592	--
31	1,2-Dichloropropane	78875	0.5
101	1,2,4-Trichlorobenzene	120821	1
76	1,3-Dichlorobenzene	541731	2
32	1,3-Dichloropropene	542756	0.5
77	1,4-Dichlorobenzene	106467	2
17	Acrolein	107028	2
18	Acrylonitrile	107131	2
19	Benzene	71432	0.5
20	Bromoform	75252	2
34	Bromomethane	74839	2
21	Carbon tetrachloride	56235	0.5
22	Chlorobenzene (mono chlorobenzene)	108907	2
24	Chloroethane	75003	2
25	2- Chloroethyl vinyl ether	110758	1
26	Chloroform	67663	2
35	Chloromethane	74873	2
23	Dibromochloromethane	124481	0.5
27	Dichlorobromomethane	75274	0.5
36	Dichloromethane	75092	2
33	Ethylbenzene	100414	2
88	Hexachlorobenzene	118741	1
89	Hexachlorobutadiene	87683	1
91	Hexachloroethane	67721	1
94	Naphthalene	91203	10
38	Tetrachloroethylene	127184	0.5
39	Toluene	108883	2

[1] The reporting levels required in these tables for priority pollutant constituents are established based on Section 2.4.2 and Appendix 4 of the SIP.

CTR #	Constituent	CAS Number	Maximum Reporting Level[1] µg/L or noted
40	trans-1,2-Dichloroethylene	156605	1
43	Trichloroethylene	79016	2
44	Vinyl chloride	75014	0.5
	Methyl-tert-butyl ether (MTBE)	1634044	--
	Trichlorofluoromethane	75694	--
	1,1,2-Trichloro-1,2,2-Trifluoroethane	76131	--
	Styrene	100425	--
	Xylenes	1330207	--
60	1,2-Benzanthracene	56553	5
85	1,2-Diphenylhydrazine	122667	1
45	2-Chlorophenol	95578	5
46	2,4-Dichlorophenol	120832	5
47	2,4-Dimethylphenol	105679	2
49	2,4-Dinitrophenol	51285	5
82	2,4-Dinitrotoluene	121142	5
55	2,4,6-Trichlorophenol	88062	10
83	2,6-Dinitrotoluene	606202	5
50	2-Nitrophenol	25154557	10
71	2-Chloronaphthalene	91587	10
78	3,3'-Dichlorobenzidine	91941	5
62	3,4-Benzofluoranthene	205992	10
52	4-Chloro-3-methylphenol	59507	5
48	4,6-Dinitro-2-methylphenol	534521	10
51	4-Nitrophenol	100027	10
69	4-Bromophenyl phenyl ether	101553	10
72	4-Chlorophenyl phenyl ether	7005723	5
56	Acenaphthene	83329	1
57	Acenaphthylene	208968	10
58	Anthracene	120127	10
59	Benzidine	92875	5
61	Benzo(a)pyrene (3,4-Benzopyrene)	50328	2
63	Benzo(g,h,i)perylene	191242	5
64	Benzo(k)fluoranthene	207089	2
65	Bis(2-chloroethoxy) methane	111911	5
66	Bis(2-chloroethyl) ether	111444	1
67	Bis(2-chloroisopropyl) ether	39638329	10
68	Bis(2-ethylhexyl) phthalate	117817	5

CTR #	Constituent	CAS Number	Maximum Reporting Level[1] µg/L or noted
70	Butyl benzyl phthalate	85687	10
73	Chrysene	218019	5
81	Di-n-butylphthalate	84742	10
84	Di-n-octylphthalate	117840	10
74	Dibenzo(a,h)-anthracene	53703	0.1
79	Diethyl phthalate	84662	10
80	Dimethyl phthalate	131113	10
86	Fluoranthene	206440	10
87	Fluorene	86737	10
90	Hexachlorocyclopentadiene	77474	5
92	Indeno(1,2,3-c,d)pyrene	193395	0.05
93	Isophorone	78591	1
98	N-Nitrosodiphenylamine	86306	1
96	N-Nitrosodimethylamine	62759	5
97	N-Nitrosodi-n-propylamine	621647	5
95	Nitrobenzene	98953	10
53	Pentachlorophenol	87865	1
99	Phenanthrene	85018	5
54	Phenol	108952	50
100	Pyrene	129000	10
	Aluminum	7429905	--
1	Antimony	7440360	5
2	Arsenic	7440382	10
15	Asbestos	1332214	--
	Barium	7440393	--
3	Beryllium	7440417	2
4	Cadmium	7440439	0.5
5a	Chromium (total)	7440473	50
5b	Chromium (VI)	18540299	10
6	Copper	7440508	5
14	Cyanide	57125	5
	Fluoride	7782414	--
	Iron	7439896	--
7	Lead	7439921	0.5
8	Mercury	7439976	0.2
	Manganese	7439965	--
	Molybdenum	7439987	--

CTR #	Constituent	CAS Number	Maximum Reporting Level[1] µg/L or noted
9	Nickel	7440020	5
10	Selenium	7782492	5
11	Silver	7440224	1
12	Thallium	7440280	1
	Tributyltin	688733	--
13	Zinc	7440666	10
110	4,4'-DDD	72548	0.05
109	4,4'-DDE	72559	0.05
108	4,4'-DDT	50293	0.01
112	alpha-Endosulfan	959988	0.02
103	alpha-Hexachlorocyclohexane (BHC)	319846	0.01
	Alachlor	15972608	--
102	Aldrin	309002	0.005
113	beta-Endosulfan	33213659	0.01
104	beta-Hexachlorocyclohexane	319857	0.005
107	Chlordane	57749	0.1
106	delta-Hexachlorocyclohexane	319868	0.005
111	Dieldrin	60571	0.01
114	Endosulfan sulfate	1031078	0.05
115	Endrin	72208	0.01
116	Endrin Aldehyde	7421934	0.01
117	Heptachlor	76448	0.01
118	Heptachlor Epoxide	1024573	0.01
105	Lindane (gamma-Hexachlorocyclohexane)	58899	0.02
119	PCB-1016	12674112	0.5
120	PCB-1221	11104282	0.5
121	PCB-1232	11141165	0.5
122	PCB-1242	53469219	0.5
123	PCB-1248	12672296	0.5
124	PCB-1254	11097691	0.5
125	PCB-1260	11096825	0.5
126	Toxaphene	8001352	0.5
	Atrazine	1912249	--
	Bentazon	25057890	--
	Carbofuran	1563662	--
	2,4-D	94757	--
	Dalapon	75990	--

CTR #	Constituent	CAS Number	Maximum Reporting Level[1] µg/L or noted
	1,2-Dibromo-3-chloropropane (DBCP)	96128	--
	Di(2-ethylhexyl)adipate	103231	--
	Dinoseb	88857	--
	Diquat	85007	--
	Endothal	145733	--
	Ethylene Dibromide	106934	--
	Glyphosate	1071836	--
	Methoxychlor	72435	--
	Molinate (Ordram)	2212671	--
	Oxamyl	23135220	--
	Picloram	1918021	--
	Simazine (Princep)	122349	--
	Thiobencarb	28249776	--
16	2,3,7,8-TCDD (Dioxin)	1746016	--
	2,4,5-TP (Silvex)	93765	--
	Diazinon	333415	0.05
	Chlorpyrifos	2921882	0.014
	Ammonia (as N)	7664417	--
	Chloride	16887006	--
	Flow		--
	Hardness (as $CaCO_3$)		--
	Foaming Agents (MBAS)		--
	Nitrate (as N)	14797558	--
	Nitrite (as N)	14797650	--
	pH		--
	Phosphorus, Total (as P)	7723140	--
	Specific conductance (EC)		--
	Sulfate		--
	Sulfide (as S)		--
	Sulfite (as SO_3)		--
	Temperature		--
	Total Dissolved Solids (TDS)		--

ATTACHMENT I – VOLATILE ORGANIC COMPOUNDS MEASURED BY USEPA METHOD 502.2

Benzene
Bromobenzene
Bromochloromethane
Bromodichloromethane
Bromoform
Bromomethane
n-Butylbenzene
sec-Butylbenzene
tert-Butylbenzene
Carbon Tetrachloride
Chlorobenzene
Chloroethane
Chloroform
Chloromethane
2-Chlorotoluene
4-Chlorotoluene
Dibromochloromethane
1,2-Dibromo-3-Chloropropane
1,2-Dibromoethane
Dibromomethane
1,2-Dichlorobenzene
1,3-Dichlorobenzene
1,4-Dichlorobenzene
Dichlorodifluoromethane
1,1-Dichloroethane
1,2-Dichloroethane
1,1-Dichloroethene
cis-1,2-Dichloroethylene
trans-1,2-Dichloroethylene
1,2-Dichloropropane
1,3-Dichloropropane
2,2-Dichloropropane
1,1-Dichloropropene
cis-1,3-Dichloropropene
trans-1,3-Dichloropropene
Ethylbenzene
Hexachlorobutadiene
Isopropylbenzene
4-Isopropylbenzene
Methylene Chloride
Naphthalene
Propylbenzene
Styrene
1,1,2,2-Tetrachloroethane
1,1,1,2-Tetrachloroethane
Tetrachloroethylene
Toluene
1,2,3-Trichlorobenzene
1,2,4-Trichlorobenzene
1,1,1-Trichloroethane
1,1,2-Trichloroethane
Trichloroethylene
Trichlorofluormethane
1,2,3-Trichloropropane
1,2,4-Trimethylbenene
1,3,5-Trimethylbenzene
Vinyl Chloride
o-Xylene
m-Xylene
p-Xylene